Southern Power & Industry

The Industrial and Power Journal of the South[illegible]hwest

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JULY, 1957

SPI . . . 54th Year

REACHES industrial plants (manufacturing, process, utility and large service) in the South & Southwest.

SERVES plant managers, superintendents, engineering department heads and plant operating staffs.

PROVIDES information to solve design, installation, operating and plant maintenance problems.

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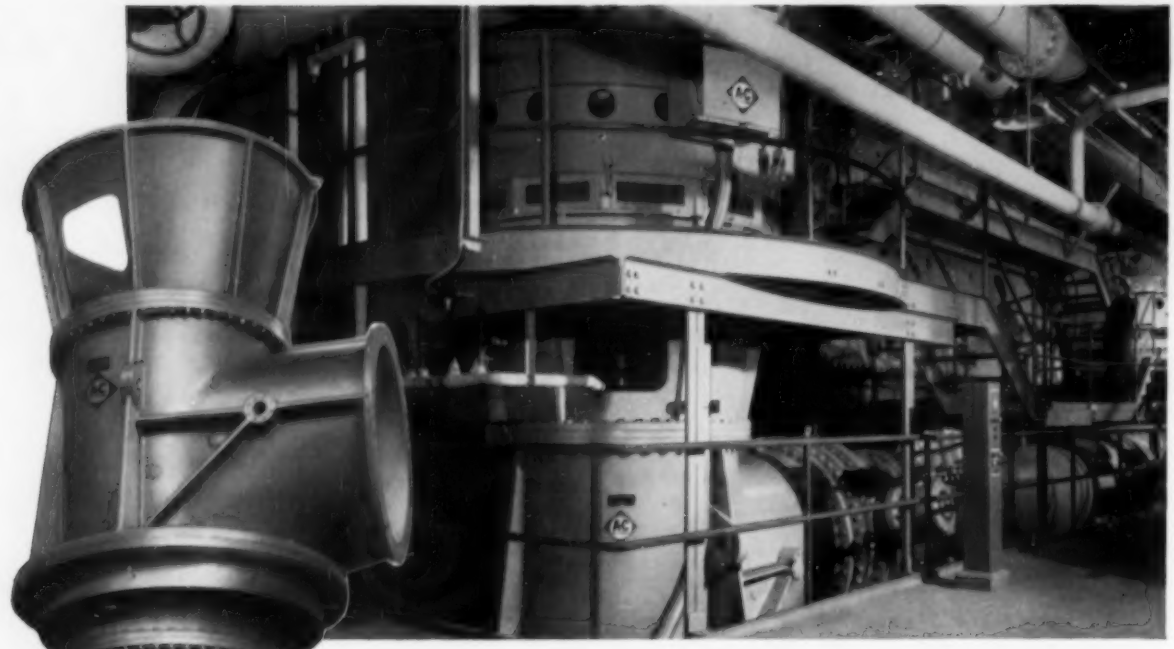
SPI

FIFTY CENTS PER COPY

Allis-Chalmers Pumps Meet Power Plant Requirements



Continuous Condenser Service at Detroit Edison's River Rouge Plant

At River Rouge Station, these Allis-Chalmers 84 by 60-inch circulating pumps, driven by 500-hp motors, deliver 73,000 gpm to the A-C condenser.

They play an important part in assuring service continuity at this station. An accurately cast impeller, hand finished and dynamically balanced, assures smooth operation. Other features, including a rigid whip-free shaft, and tube-protected shaft and rubber bearings lubricated with filtered water, have made A-C circulating pumps popular throughout the power industry.

Many customers use Allis-Chalmers test facilities to properly design their intake structures.

You Get **MORE** than a Pump . . . When You Specify Allis-Chalmers

You can take advantage of Allis-Chalmers wide experience in supplying pumps to all industries. You are assured of modern design, heavy-duty construction and correct application aid — all adding up to many years of dependable service.

Allis-Chalmers is the only company that can offer you "One-Source" responsibility, with a complete unit — pump, motor and control — all built to work together. For "MORE" information about Allis-Chalmers pumps, call your local A-C office, or write Allis-Chalmers, General Products Division, Milwaukee 1, Wisconsin. A-5216

ALLIS-CHALMERS

SOUTHERN POWER & INDUSTRY is published monthly by W. R. C. Smith Publishing Co., Executive and Editorial Offices: 806 Peachtree St., N.E., Atlanta 8, Ga. Entered as second-class matter at the Post Office, Charlotte, N. C. Subscription Rates: United States and Possessions, $1.50 per year or three years for $3.00; Foreign Countries, $10.00 per year.

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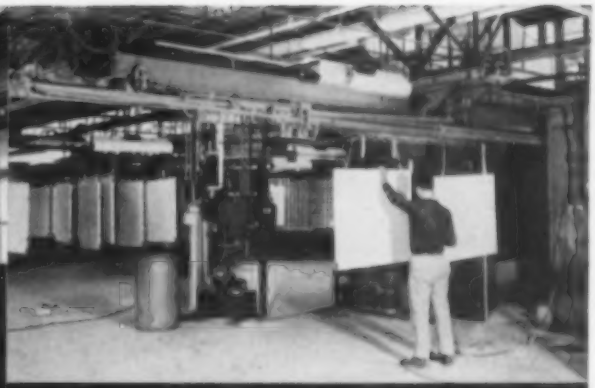
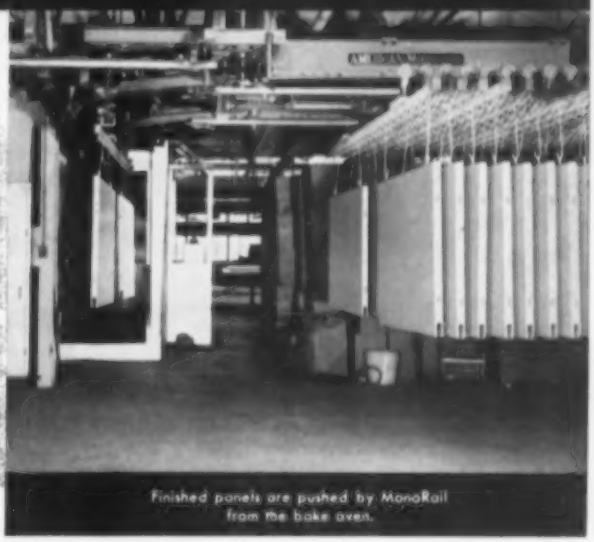
Landahl picks up panels as MonoRail pushes them from degreasing



MonoRail pneumatically pushes a "car" of panels into a finish spray booth.

Automatic Finishing with Power LANDAHL and AMERICAN MONORAIL



Finished panels are pushed by MonoRail from the bake oven.

Space was saved and automatic finishing achieved by combining two overhead handling systems.

American MonoRail cars carrying metal panels move through degreasing, priming, finishing and baking. In each operation either loading or unloading is performed automatically by power — the Landahl Chainless Conveyor acting as a "pusher" over most of the system.

Here is "team work" engineering to take advantage of the flexibility of both American MonoRail and Landahl Chainless Conveyors.

This efficient system is installed at Fostoria, Mfg. Co., Fostoria, Ohio, for finishing metal panels for office partitions.

For details on how American MonoRail or Landahl Conveyors can cut your handling costs, write today.

Member of The Materials Handling Institute, Inc. & MonoRail Manufacturers' Association.

For Power Driven Conveyors, Use Landahl Chainless Conveyors

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MONORAIL
COMPANY

AUTOMATIC DISPATCH

STACKER CRANE

MANUAL MONORAIL

RETRACTABLE CRANE

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You need such performance if you follow the trend to use arresters at 75% to 80% voltage ratings—to protect transformers against long duration switching surges as well as lightning. All Westinghouse SVS, SV, and LVS station and line type arresters are equipped with Mobilarc gaps—and there is no initial investment premium. Complete engineering details and ratings are available from your Westinghouse sales representative—or from Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pa.

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The Industrial and Power Journal of the South and Southwest

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Facts and Trends

July 1, 1957

- IDEAS FOR "BRAINSTORMING" SESSIONS--SPI's 2nd Annual Materials Handling Issue presents a special 16-page color section (pages 41-56) reporting on how many Southern and Southwestern plants have solved their problems. You can undoubtedly use many of the ideas given. But remember every plant is "unique" and materials handling equipment should be selected to meet specific needs of each individual plant.

- AUTOMATIC ELEVATORS at Bemis Cotton Mill, Bemis, Tennessee (see pages 42-43), are self-leveling and feature a tilting platform. The Otis engineered system moves materials from spinning rooms to weaving rooms, and returns empty bobbins to the spinning rooms. When elevators arrive at proper landing, operator automatically tips the auxiliary platform so that the boxes in the car run out into a restricted area in front of the elevator.

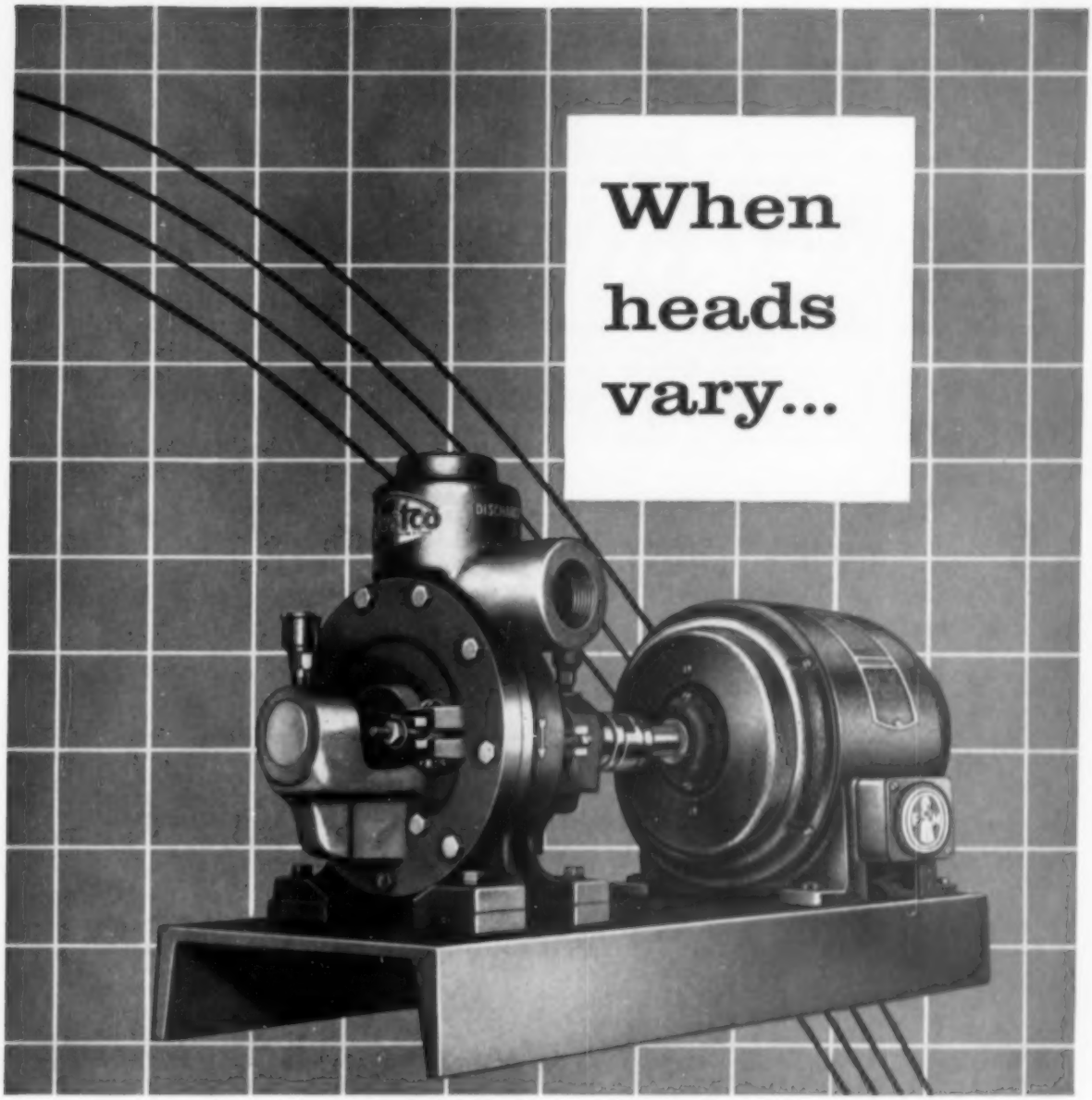
- PORTABLE ELEVATOR at Brown Forman Distillers Corporation in Louisville, Kentucky, ricks 500 lb barrels of whisky to any of six "ricking" levels. Revolvator unit designed for use in hazardous area--see page 45.

- ORDER FILLING SYSTEM designed by Mathews Conveyer Company and described on pages 46-47, provides remote control for releasing and counting individual items of an order or group of orders and combining all items for future distribution.

- AUTOMATIC DISPATCH SYSTEM for Burlington Industries' Phenix Mills in Kings Mountain, North Carolina, is featured on pages 48-49. A Louden "Automatic Dispatch System" integrates factory units. It has wide application in dispatching of many types of loads from one building to another. Unattended, the loads can be raised, transported and lowered.

- PUSH-BUTTON CONVEYOR SYSTEM at Brown Shoe Company's $2 million distribution warehouse in St. Louis, is described on pages 50-51. Three miles of Alvey conveyors provide uninterrupted flow to loading docks.

- NARROW-AISLE TIERING TRUCKS at Halliburton Oil Well Cementing Co., in Duncan, Oklahoma, have provided more warehouse space. Equipment and advantages are highlighted on page 52.



Install a Fairbanks-Morse Westco peripheral pump . . . and make sure of efficiency with little or no loss of capacity!

How? Through original F-M Westco design—these pumps deliver approximately the same capacity when discharging against high pressure or low pressure—and all at 1750 rpm.! Another important point: by featuring a multi-vaned impeller, these Westco peripheral pumps deliver multi-stage performance from a single-stage pump.

You'll find Westco peripheral pumps ideal as integral parts of machines, units or systems . . . such as circulating hot water, ice water or brine . . . or for service on clear water, sump, solvents or chemical fluids, feeding filters or boilers, or as booster pumps. Capacities to 200 gpm., heads to 600 feet. For complete information and assistance contact your F-M Pump Dealer, or write today to Fairbanks, Morse & Co., Dept. SPI-7, 600 South Michigan Avenue, Chicago 5, Illinois.

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Facts and Trends (Continued)

- ELEVATOR OVERLOAD PREVENTED--on page 54 engineers of the Brunswick Pulp and Paper Company report a solution to a chip elevator handling problem. Chief electrician describes how a signal was provided to warn the chip feeders when overload was approaching the trip-out point.

- RAMP LOADING PROBLEMS at Freeport Sulphur Company, Freeport, Louisiana, were effectively solved with an Allis-Chalmers fork lift truck. Equipped with a torque converter, truck easily maneuvers the 30 ft, steeply-pitched ramp under load without slipping or skidding. Details on page 55.

- WIRE ROPE SPLICING techniques at two Jacksonville, Florida, plants are described on page 56. New portable wire rope splicers afford speed and low cost operation.

- MIXING AND BLENDING BULK MATERIAL? In a new system by Hewitt-Robins, blending is done in a metal or concrete bin containing a series of overlapping baffles which deflect the out-flow to the sides of the container--see page 92 for details.

  Material is layered into the bin by conventional belt conveyor or simple chute. While bin is being emptied from the bottom the incoming material is directed into the side chute section in a continuous series of small increments from top to bottom. Blending thus takes place automatically as small portions of each layer enter the chute area and flow downward by gravity.

- GAS TURBINE PERFORMANCE--a four year operating report by West Texas Utilities is featured on pages 36-40 of this issue. The company is now installing a second gas turbine unit which will be a duplicate of the existing machine placed in service in December, 1952. Operating report, by A. R. Cox of the production department, features tabulations of serviceability, unserviceable hours, fuel economy and capability and a laboratory report of compressor deposit.

- SOOT BLOWERS AT MERAMEC--250,000 kw, 2000 psig, 1000 F are the statistics for Union Electric of Missouri's newest unit. Company uses compressed air for soot blowing on boilers 1 and 2; but Unit 3 will use cold reheat steam because evaluation studies proved it to be more economical. Details are reported on page 60.

  Unit will be equipped with a total of 54 blowers divided into 32 wall deslaggers, 16 retractable units in the convection zone, 4 rotaries in the economizer and 2 swinging-arm type in the air heaters.

  Reaching 38 ft into a boiler tube bank to blow soot is the record distance covered by a retractable soot blower installed on No. 1 boiler. This is the first blower built for this travel. The Vulcan T-30 blower (Copes-Vulcan Div.) was substituted for two opposed blowers (each of which traveled one-half the width of the furnace) to reduce number of units necessary for cleaning the deep tube bank. T-30 blowers will also be used in Unit No. 3.

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Series 2800

Liquid Level CONTROLS

For use as high and low limit switches, to sound alarms, flash signal lights, start or stop fluid transfer pumps, or to operate control valves.

Series 2800

Series 2800 are dependable, inexpensive, snap acting liquid level controls. They are float actuated and, for maximum versatility, are available with either electric (explosion-proof) or pneumatic switch action. Either pilot type is interchangeable on the same float housing assembly. Stab-in type of tank mounting provides easy installation. Available with 4" iron or steel flanged tank connection. Write for Bulletin F-2800 for complete information.

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For more information, use Reply Card—Page 73

NEWS for the South & Southwest

Eggelhof Engineers Hold Annual Sales Meeting in New Orleans

Eggelhof Engineers, Inc., with headquarters in **Houston, Texas,** serves Southern industry through branch offices in **Dallas, Shreveport, San Antonio, Tulsa, Lubbock** and **New Orleans.** Their annual sales meeting, combined with training sessions with manufacturers' personnel, was held recently in New Orleans.

Seated, in the usual order, are Arthur Anderson, Dalton Chapman, Will Molnari, Claude Cullinane, Bob Molnari, Steve Andre and Ed Reed (Houston); Standing, Chuck Menefee (Lubbock); Cliff Lindsey (Tulsa); Ernest Belmont, Ed Lafaye, and Henry Turner (New Orleans); Jim Powell (San Antonio); Wilson Greene, Henry Eggelhof, Harper Young (Dallas); Al Jones and George Lakes (Shreveport).

Company represents American District Steam Div., Clark Manufacturing Co., Cuno Engineering, Cyclotherm Div., Fielden Instrument Div., Fulton Sylphon Div., Hoppes Manufacturing, Spencer Turbine, Titusville Iron Works and John Zink Company.

Dow Corning to Build Greensboro, N. C. Plant

Dow Corning Corporation will build a 35,000 sq ft plant at **Greensboro, N. C.** to manufacture products of the Silicone Specialties Division—Sight Savers, Shoe Saver, and Dow Corning 4X Compound for lubricating automobile gasketing rubber and for insulating and sealing ignition systems from moisture.

Aside from a center for silicone finishes for textiles in Greensboro, all of Dow Corning's facilities have been in Midland, Michigan until now. Besides decentralizing, the move permits consolidating consumer products manufacturing nearer to important markets.

Biggan & Assoc.—Southwest

Patrick J. Biggan, long identified as a member of the Waldo E. Bugbee battery sales and service organization, has extended his sales activities by opening his own battery business at the same site. The new organization, known as **P. J. Biggan and Associates,** has offices located at 1802 National Building, San Antonio.

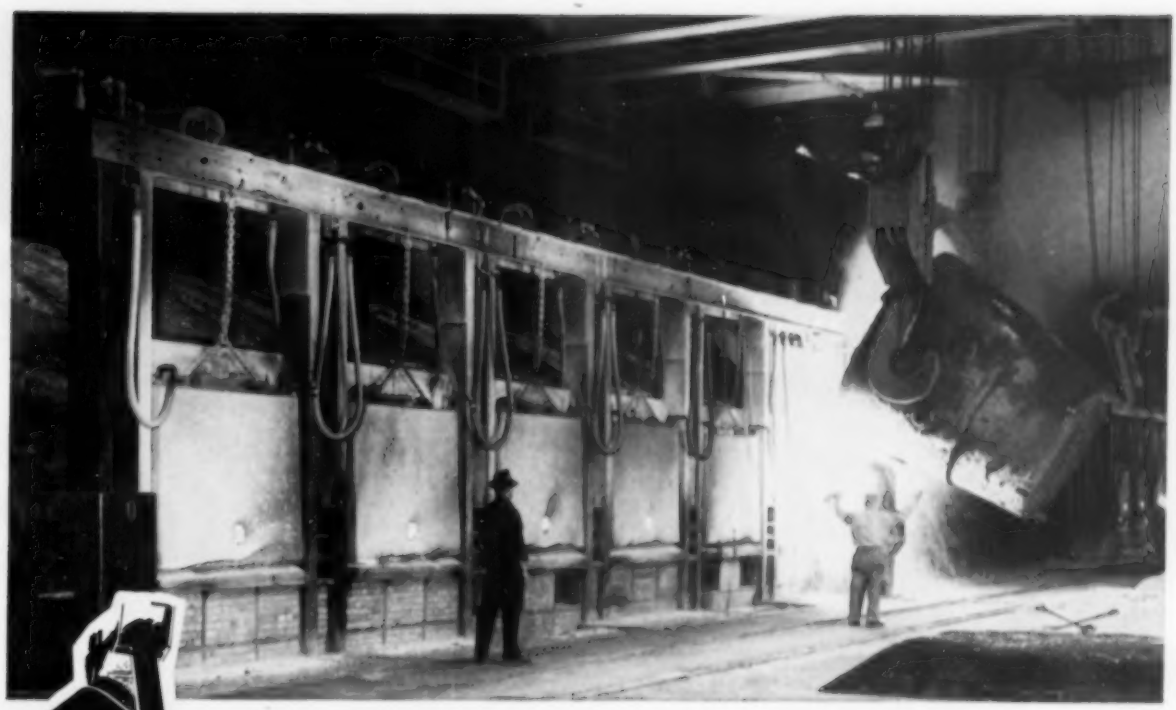
Biggan first became associated with C & D Batteries, Inc., Conshohocken, Pa., manufacturers of industrial storage batteries in November, 1955. Initially, Biggan was occupied with railroad battery sales in **Texas, Louisiana** and **Arkansas.** Last October he expanded activities to take in industrial sales of C & D batteries in **south Texas** as well.

Federal Pacific Electric—Va.

Gordon E. Granger, Jr., has been appointed manager of **Federal Pacific Electric Company's** Virginia Branch, according to an announcement by H. E. Knudson, middle Atlantic regional sales manager.

Olin Mathieson—St. Louis

The Industrial Chemicals Division of **Olin Mathieson Chemical Corporation** has moved its **St. Louis** district sales office to 8000 Bonhomme St., St. Louis 5, Missouri, according to **Charles H. Larson,** district sales manager.



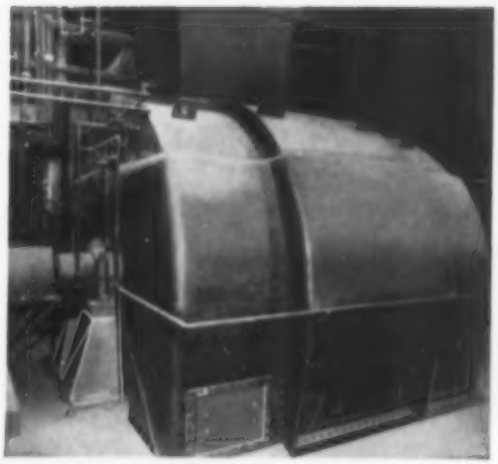
World's largest open hearth furnace utilizes Clarage Fans

600 TONS— enough steel in each heat for 300 automobiles. That's the capacity of Weirton Steel Company's new open hearth furnace at Weirton, W. Va. Weirton Steel is a division of National Steel Corporation.

Designed and built by Loftus Engineering Corporation, Gateway Center, Pittsburgh, this giant is completely automatic in operation.

As for so many other impressive installations, Clarage equipment was selected — a Clarage induced draft fan for the waste heat boiler and a Clarage forced draft fan for the furnace.

Investigate the advantages Clarage equipment offers for YOUR mechanical draft installations. Contact our nearest sales engineering office or write us for complete literature. CLARAGE FAN COMPANY, Kalamazoo, Michigan.



Clarage heavy-duty fan provides induced draft for waste heat boiler.

CLARAGE ... *dependable equipment for making air your servant*

SALES ENGINEERING OFFICES IN ALL PRINCIPAL CITIES • IN CANADA: Canada Fans, Ltd., 4285 Richelieu St., Montreal

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ANDERSON CHEMICAL CO.
covers the south with service representatives

Scale and corrosion are serious threats to any water system operation in three ways: the damaging effects on industrial products; the deterioration of equipment; and the reduction in efficiency or capacity of processes. Prevention of scaling and corrosion, while retaining the desirable characteristics of the water, is the purpose of modern water treating techniques. For this reason we have competent service representatives covering the South, supported by a modern laboratory and a staff of experienced chemists who offer you a free survey and dependable service for your particular water problems.

ANDERSON CHEMICAL COMPANY PROVIDES THESE SERVICES

- Free survey and analysis of the makeup water.
- Recommendation of the proper and most economical water treatment chemicals for your needs.
- Analysis of the treated water to adjust dosage of treatment in regard to service and economy.
- Plant visits at regular intervals to assure your receiving maximum results.
- Constant attention without charge to your equipment using water treatment.

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MACON, GEORGIA
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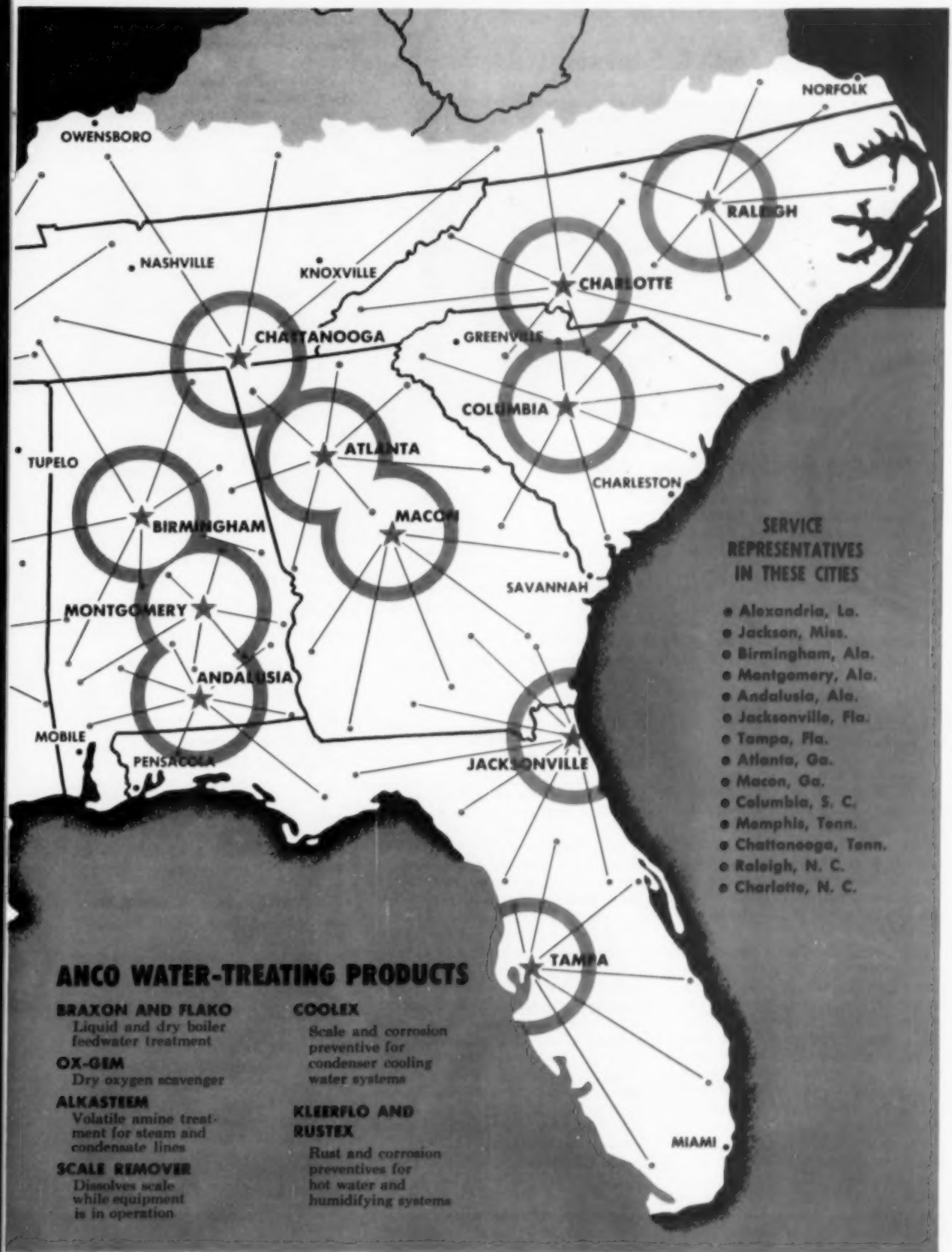
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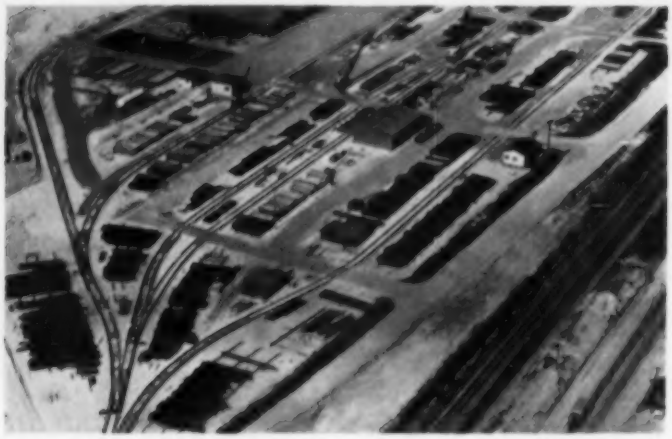
ALKASTEEM
Volatile amine treatment for steam and condensate lines
SCALE REMOVER
Dissolves scale while equipment is in operation
COOLEX
Scale and corrosion preventive for condenser cooling water systems
KLEERFLO AND RUSTEX
Rust and corrosion preventives for hot water and humidifying systems

News for the South & Southwest (Continued)



New Pipe Coating Plant — Atlanta

Southern Pipe Coating Company now occupies a 17-acre, $300,000 plant in Doraville, an Atlanta, Georgia, suburb. Sales offices are at 795 Peachtree St., N.E., Atlanta. J. C. Matthews, formerly with the Barrett Division of Allied Chemical and Dye Corporation, is Sales Manager.

Modern plant will apply high-quality coating and wrapping to gas and gasoline transmission pipe. It is designed to process 12 miles of pipe a day. Large area set aside for pipe storage will enable customers to store all pipe before processing and then have it shipped directly to the job site immediately or shortly after coating.

Nuclear Power Plant for Carolinas-Virginia Assoc.

Carolinas-Virginia Nuclear Power Associates, Inc., recently announced that it has entered an agreement with Westinghouse Electric Corp., for the development of a nuclear power plant.

N. A. Cocke, CVNPA president, said that the target date for completion of the plant is 1962. It will be built on a site in the area served by the four power companies which comprise CVNPA's membership — CP&L, Duke Power Co., South Carolina Electric & Gas Co., and Virginia Electric & Power Co.

Organized last year, CVNPA has already retained Stone & Webster Engineering Corp., of Boston and General Nuclear Engineering Corp., of Dunedin, Fla., as consultants. The latter is headed by Dr. Walter H. Zinn, noted physicist and formerly director of the Argonne National Laboratory of the Atomic Energy Commission.

The two consulting firms, along with Westinghouse and CVNPA, will decide what type of reactor to build, select a site, and negotiate for a development contract with the Atomic Energy Commission to cover this program.

U. S. Rubber—Dallas

Construction is under way on a new, modern sales branch and warehouse for **United States Rubber Co.** in **Dallas, Texas.**

The new building, which will be completed in the early Fall, will replace present outgrown offices and warehouse facilities. It will be located in the Brook Hollow Industrial District.

Roy W. Goodfellow, branch operating manager, said the consolidated quarters will provide improved distributing and warehousing facilities for tires, footwear, mechanical goods and hundreds of other products manufactured by the company. U. S. Rubber will be better equipped to service our customers in **Texas, New Mexico, Oklahoma,** and **Arkansas.**

The new branch will contain 102,889 sq ft and will be located on a five-acre plot. It will consolidate under one roof U. S. Rubber's present offices and warehouse at 6125 Peeler Street and warehouse at 1101 Broome Street.

Executive Changes at The Marley Company

The Marley Company, Kansas City, Missouri, has created a new sales executive position, that of director of sales and advertising, which will be filled by **Lyle A. Christensen,** a company vice-president and for 11 years general sales manager. In his new capacity, Christensen will have overall charge of the company's entire marketing program.

Succeeding him as general sales manager is **F. B. (Frosty) Reed** who has been elected a vice president. Reed will have charge of all sales to industry and air conditioning markets in the United States. Since joining the company 16 years ago, he has filled several positions in the Marley sales division, the most recent of which was that of assistant general sales manager.

John H. Bateman, technical assistant to the sales director, has become president of Marley International, Inc., and Marley Pan American, Inc., the company's export sales subsidiaries.

Clyde Lilly Promoted by General Electric Co.

Clyde A. Lilly, well known in the South & Southwest, has been appointed as Manager-Marketing for General Electric Company's Large Steam Turbine-Generator Department.

Mr. Lilly succeeds **Robert S. Neblett,** who has been named Manager-Marketing Administration for the LST-G Dept. Neblett's change in positions was made at his own request for personal reasons.

A native of Fort Worth, Texas, Mr. Lilly has been with General Electric since 1945. In 1951 he was named a turbine specialist for the Company's Southeastern District, with his home office in Atlanta. Two years later he became a sales engineer, and in 1954 was named Manager-Sales for the Birmingham office. He was selected to be Manager-User Industries Sales for Alabama in 1955 and retained this position until his present appointment.

(Continued on Page 24)

DECIDING ON AIRFOIL?

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Mechanical Efficiency up to a True 92%

MAXIMUM FORCED-DRAFT PERFORMANCE UNDER SPECIFIC CONDITIONS

WHEN YOU INSIST ON "BUFFALO" AIRFOIL FANS you immediately find many important factors in your favor. "Buffalo" Airfoils give you *true* mechanical efficiencies up to 92%. Main point here is that "Buffalo" Airfoil Fans will positively *live-up* to their ratings. They are designed, engineered, built and tested to deliver these peak efficiency ratings. You can *rely* on "Buffalo" Airfoils to meet your performance specifications.

There are sound engineering "reasons why" behind the proven performance of "Buffalo" Airfoil Fans. "Buffalo" offers unique, deep-blade airfoil design plus a brand new approach to streamlining. Turbulence is reduced to an absolute minimum because of the smooth inlet bell — the matching curved wheel flange — the new "Buffalo" divergent outlet. And with "Buffalo", you get more than an airfoil fan — you can choose from a *complete line* of airfoil and semi-airfoil wheels, to give you maximum efficiency for your precise operating conditions.

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Canadian Blower & Forge Co., Ltd., Kitchener, Ont.

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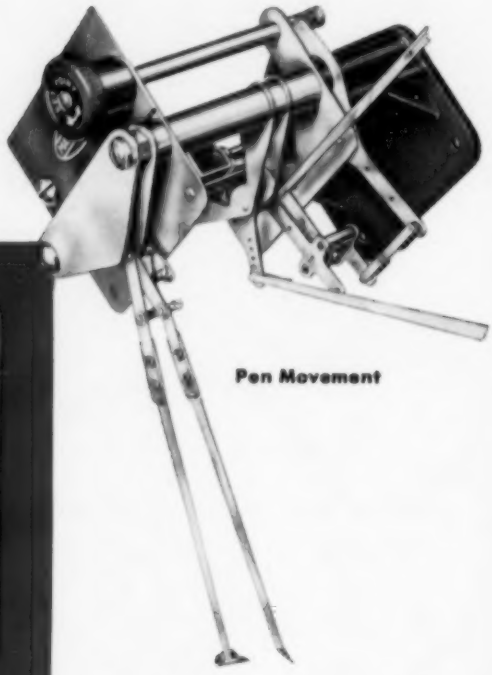
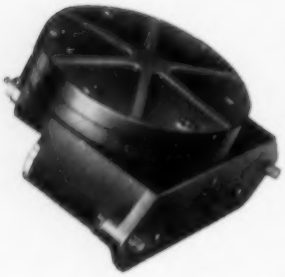
ALL-IN-ONE

Exclusive gimbal unit combines primary and feed-back motion to provide three types of control in one instrument without change of parts — proportional, on-off and differential gap, each with direct or reverse action.



Pen Movement

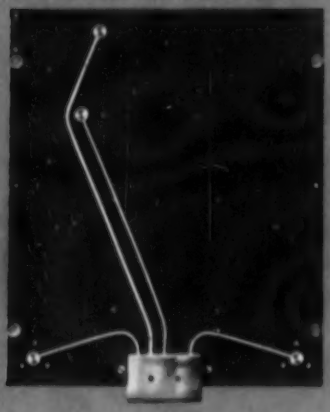
Ball and socket pivot, common axis of rotation for pen or pointer and set point index, provides maximum flexibility in adding pens and supplementary control functions. Gearless friction drive permits precise adjustment of set point.



This is the Masoneilan balanced amplifying relay type pilot featuring large capacity, frictionless floating action valve and cleanable sapphire orifice.

60000 Series includes indicating controllers and transmitters, recorders and recording controllers.

Rear view of black plate



Plug-in pneumatic units plus manifolding of air passages practically eliminate air tubing in case — assure simplicity, ready accessibility.

Proportional Control

DIRECT

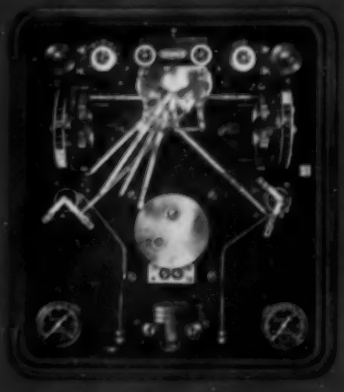
REVERSE

Differential Gap

DIRECT

REVERSE

One simple adjustment of knurled wheel selects type of control and simultaneously adjusts proportional band or width of differential gap.

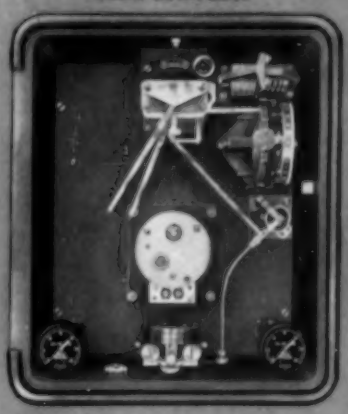


Availability of duol (two complete controllers), duplex (one primary element — two control mechanisms), or dual-selector (two controllers with common pilot) for special purposes — in one case.

PNEUMATIC CONTROLLER

Advanced design features exclusive Gimbal Unit, plug-in pneumatic units, and interchangeable unit subassemblies — enabling selection of variety of control types and supplementary functions IN ONE CASE.

Basic Controller



The basic controller in which all units are readily interchangeable — all adjustments and settings are made without disturbing the chart. Calibration is simple and will not drift.

The Masoneilan 60000 Series offers a basic design instrument with a wide selection of variations and combinations with which you are able to obtain accurate, dependable, pneumatic process control — however complex.

Types of Control include On-Off, Proportional, Differential Gap, Proportional-Reset, Proportional-Derivative, Proportional-Reset-Derivative.

Supplementary Functions include Pneumatic Set, Time Schedule, Differential.

Combinations possible are Dual, Dual Selector and Duplex types.

Recording, Indicating and/or Transmitting varieties are available.

The features illustrated here, plus sturdy construction, ease of calibration and adjustment, accessibility and freedom from maintenance, make the 60000 Series truly the "instrument man's instruments" and the treasurer's friends.

Ask the Mason-Neilan office nearest you for a demonstration of these advantages — or write for catalog.

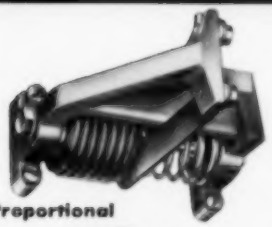
MASON-NEILAN

Division of Worthington Corporation

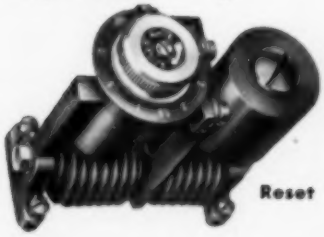
35 Nahatan Street, Norwood, Massachusetts

SEVENTY-FIFTH 75 ANNIVERSARY 1856 1931

Sales Offices or Distributors in the Following Cities:
New York • Syracuse • Chicago • St. Louis • Tulsa • Philadelphia • Houston • Atlanta • Cleveland
Cincinnati • Kansas City • Phoenix • Detroit • San Francisco • Louisville • Salt Lake City • El Paso
Albuquerque • Charlotte • Los Angeles • Corpus Christi • Denver • Appleton • Birmingham
New Orleans • Seattle • Mason-Neilan Regulator Co., Ltd., Montreal and Toronto

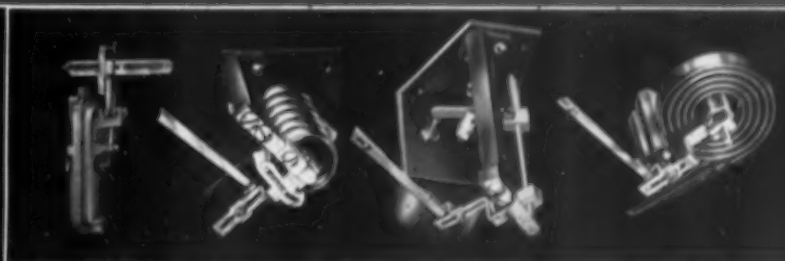


Proportional



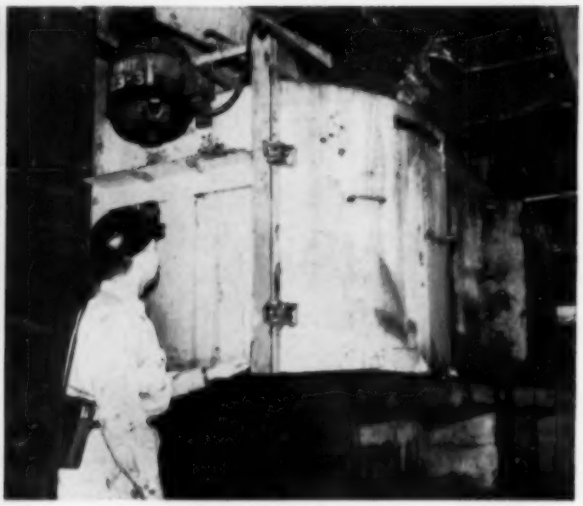
Reset

Addition of reset, derivative, pneumatic set, differential or time schedule functions by means of standard interchangeable subassemblies.



Wide selection of primary elements to suit process requirements — helical or spiral coils; bellows; diaphragm; or mechanical connection such as flow meter shaft.

WHY CHESSIE'S RAILWAY IS FIRST IN COAL



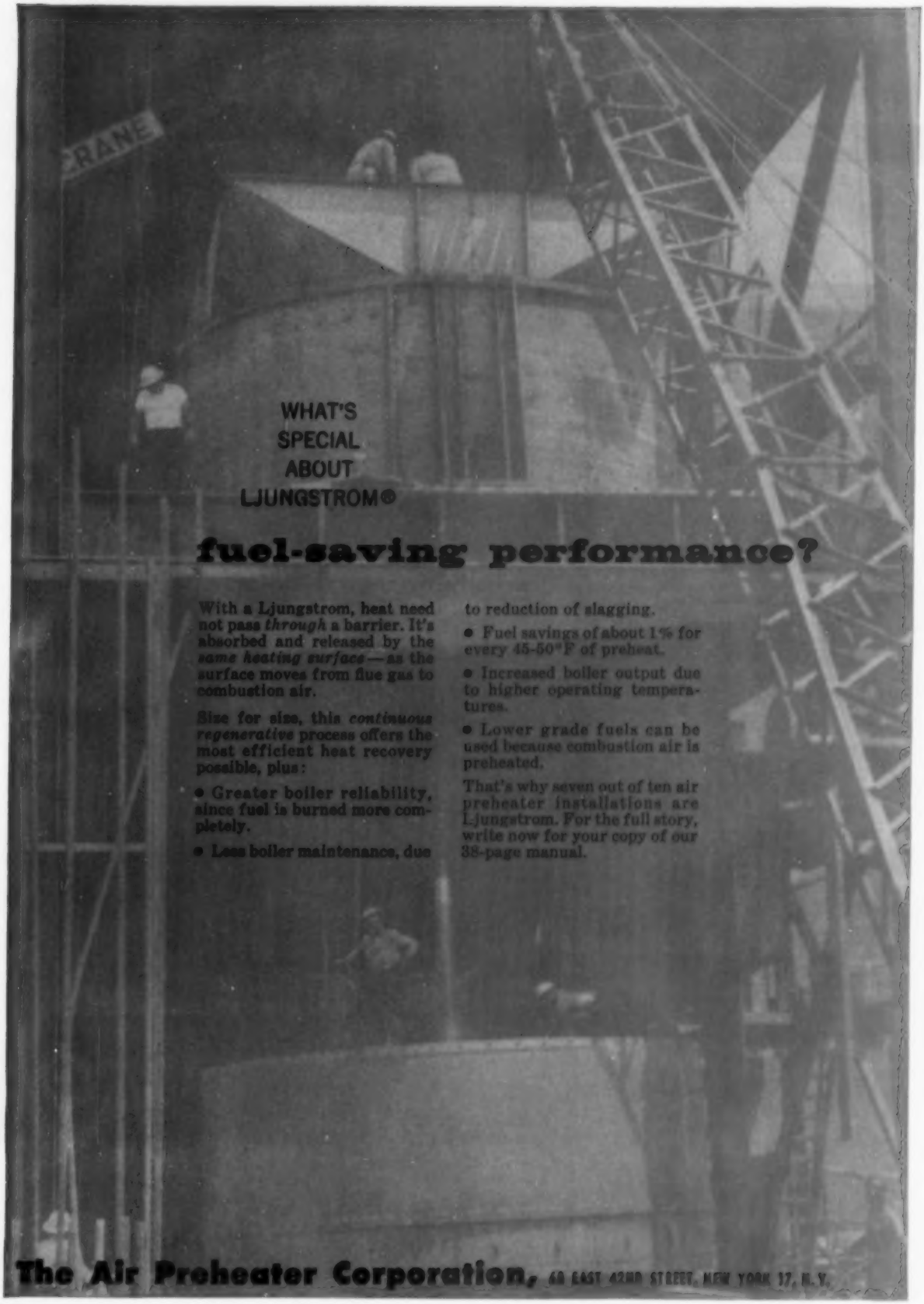
SUPERIOR COAL. The naturally high quality coals produced on the C&O are processed to meet your specifications by modern methods and equipment. Here small sizes are being dewatered by a battery of vertical screens which do the job with a minimum of degradation.

SUPERIOR SERVICE. Chesapeake and Ohio not only owns the world's largest fleet of coal cars—it keeps 99% of them operating by its prompt repair program. New automatic yards, new signal systems and ample power keep the cars rolling to insure on-time delivery.

For dependable deliveries of top quality coals, contact coal producers on the C&O. And for specific help in meeting your own fuel requirements, write to: R. C. Riedinger, General Coal Traffic Manager, Chesapeake and Ohio Railway Co., Terminal Tower, Cleveland 1, Ohio.

Chesapeake and Ohio Railway

WORLD'S LARGEST CARRIER OF BITUMINOUS COAL



WHAT'S
SPECIAL
ABOUT
LJUNGSTROM®

fuel-saving performance?

With a Ljungstrom, heat need not pass *through* a barrier. It's absorbed and released by the *same heating surface*—as the surface moves from flue gas to combustion air.

Size for size, this *continuous regenerative* process offers the most efficient heat recovery possible, plus:

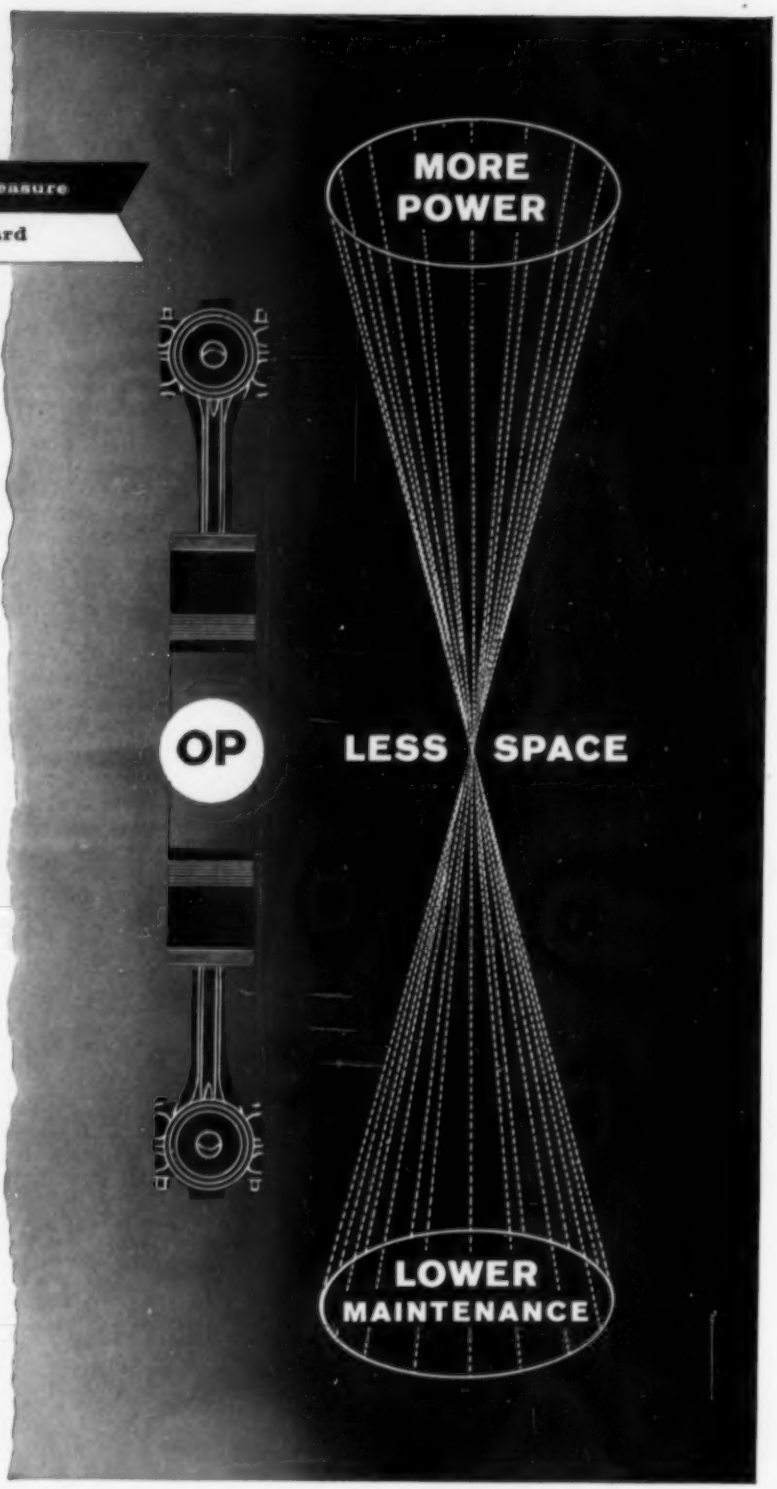
- Greater boiler reliability, since fuel is burned more completely.
- Less boiler maintenance, due to reduction of slagging.
- Fuel savings of about 1% for every 45-50°F of preheat.
- Increased boiler output due to higher operating temperatures.
- Lower grade fuels can be used because combustion air is preheated.

That's why seven out of ten air preheater installations are Ljungstrom. For the full story, write now for your copy of our 38-page manual.

The Air Preheater Corporation, 60 EAST 42ND STREET, NEW YORK 17, N. Y.

Where performance is the measure

F-M Power is the standard



Only Fairbanks-Morse Opposed-Piston Diesels offer all these advantages:

Opposed-Pistons . . . of equal weight reacting to combustion in a single cylinder liner producing more power in less floor space with less weight—power that is instantly responsive with practically no vibration.

Two-Cycle Design . . . that completely eliminates more than 40% of the moving—wearing—parts found in engines of comparable horsepower. No cylinder heads, no valves or intricate timing with its attendant adjustments. Fewer parts automatically mean less maintenance. Low B.M.E.P. further reduces wear.

Uniflow Scavenging . . . that eliminates crosscurrents, pockets. Provides greater horsepower, increased thermal efficiency for the utmost in fuel economy.

More Dependable Power...

Insist on an O-P in the 200 to 2400 horsepower class and see what top performance, reliability and economy can mean in dependable power generation. For complete information to get you started, write: Fairbanks, Morse & Co., Dept. SPI-7, Chicago 5, Illinois.

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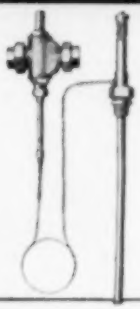
Low-cost Temperature Control — by SARCO

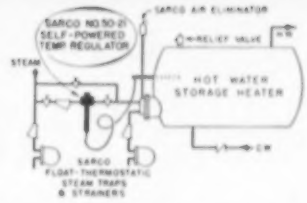
Self-Powered and Electric Indicating



Sarco Temperature Controllers
Self-Powered . . . Fully Modulating

Simple as ABC . . . a thermostat with capillary tubing and a valve. That's all! Operated by liquid expansion. Automatic. Self-powered . . . no electricity or compressed air required. Self-contained . . . no exposed mechanism. Packless valve . . . no stuffing box to leak or stick. Easy to install by any pipefitter.

Furnished with thermostats suitable for any liquid or for air in dryers, ovens, air ducts, etc. Valve sizes . . . ½ to 6". Temperature ranges to 300°F. *Bulletin 620-2.*

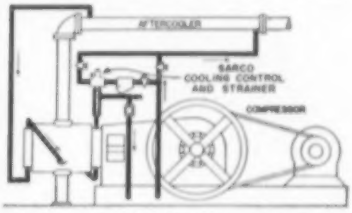


Typical applications: Shell and tube heat exchangers; condensers, oil storage tanks, dryers, etc.

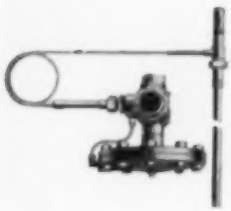
Sarco Cooling Controls
Self-Powered . . . Fully Modulating

Simple, compact, automatic thermostatic valve. Eliminates overcooling and undercooling. Saves water. Overall height of ¾" size is only 17⅛". Self-powered . . . requires no electrical or compressed air hook-up. Valve and bulb all in one unit. No exposed mechanism. Single-seated packless valve . . . not affected by silt or scale-forming minerals.

Valve sizes . . . ⅜ to 1½". Temperature ranges between 40° and 210°F. *Bulletin No. 710-B.*



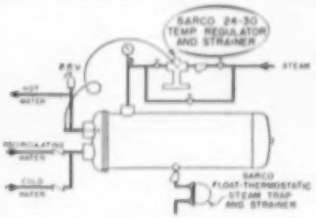
Typical applications: compressors, small engines, water-cooled bearings, condensers, dry cleaning stills, etc.



Sarco Temperature Controllers
Self-Powered . . . Single-Seated, Tight-Closing

A simple, self-powered automatic temperature controller with diaphragm-operated, pilot-controlled valve. Designed for intermittent service or service involving long periods with practically no call for steam. Self-powered by liquid expansion . . . no electricity or compressed air needed. Packless.

Valve sizes . . . ½ to 3". Temperature ranges to 300°F. *Bulletin No. 625-B.*

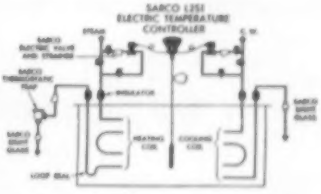


Typical applications: instantaneous heaters, fuel oil pre-heaters, high pressure applications on hot water storage tanks.

Sarco Electric Temperature Controllers
Indicating Type

Simple, inexpensive, electric-indicating automatic temperature controller. Sensitive enough to perform many of the functions of much more elaborate recorder-controllers, at a fraction of their cost. Responds to changes of ± ½°F. Adjustable. Large, easy-to-read scale shows both actual and set temperatures.

Temperature ranges between minus 90° and plus 650°F. Offers many sequence combinations such as step-heating. *Bulletin 1025-B.*



Typical applications: plating tanks, processing vats, kettles, chemical tanks, etc.

Sarcostat Hydraulic Motor Valves
Electrically Operated

For remote control by hand or thermostat. Open and shut operation. Can be equipped with semi-modulating mechanism. Powerful hydraulic action operates valves up to 5" single-seated, or 8" double-seated, at pressures up to 175 psi. Ruggedly constructed . . . to withstand severe use without constant supervision and with minimum maintenance. Operates in any position.

For direct connection to 110 volts A. C., 60 cycle current. Valve sizes . . . ½ to 5" single-seated; ½ to 6" double-seated. *Bulletin 1080-A.*

UNDIVIDED RESPONSIBILITY

From one "Complete Line" source . . . SARCO-SARCOTHERM . . . for temperature controllers, steam traps and other heating specialties.

2230-B

Write for Bulletins to—**Sarco Co., Inc., Empire State Bldg., New York 1, N.Y.**

Hot Creosote No Problem for Crane Stop-Check Valve

Defies splinters, dirt and grit

Handling hot creosote seems like an unusual application for stop-check valves. And it is!

But this installation points up dramatic proof of Crane quality—and what it means to cost-free operation.

For ten years the Long-Bell Division of the International Paper Company, at Longview, Wash., has had this Crane angle stop-check valve on a hot creosote line from a retort. The valve is operated every 24 hours. Occasionally solids come through—wood splinters, slivers, dirt and grit—and yet this Crane No. 30E 250-pound valve has a trouble-free record clear of any maintenance costs.

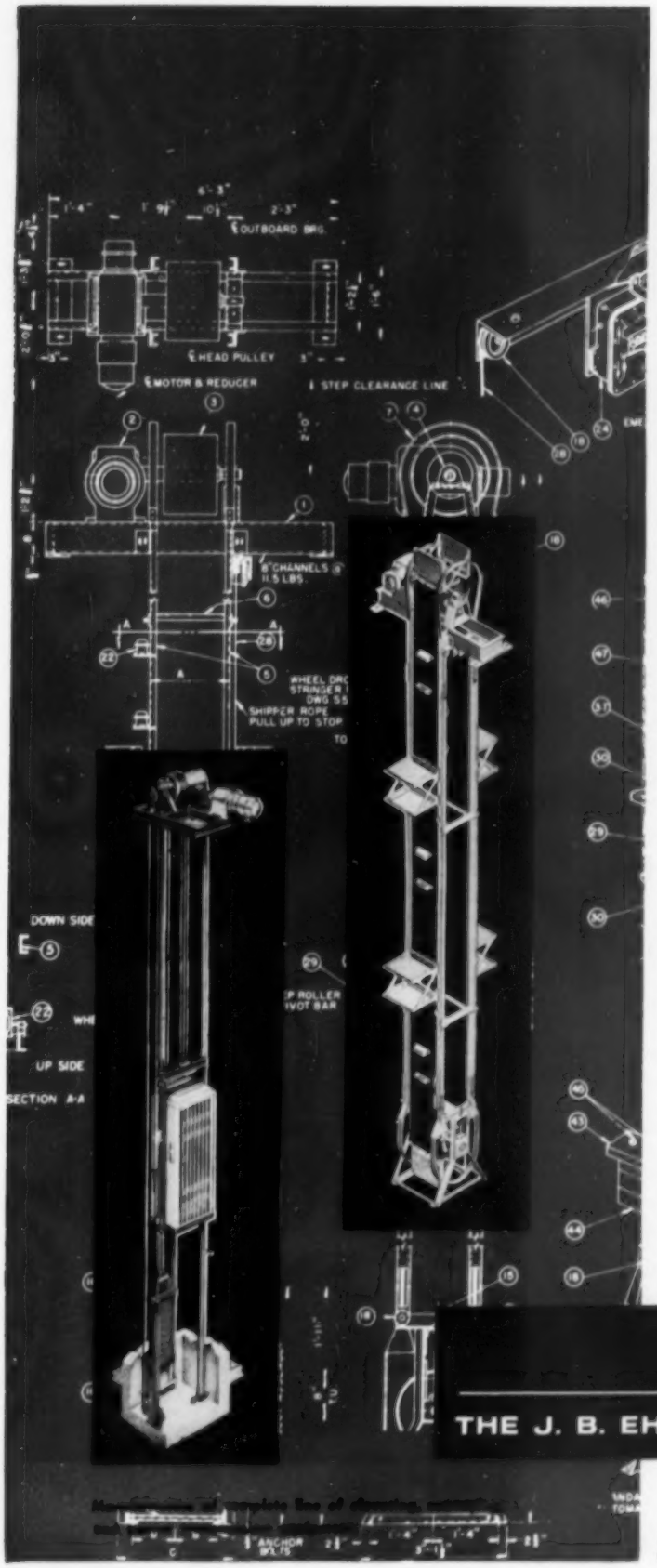
Why take chances with your valves—the heart of your flow control system. Be sure: specify Crane valves and fittings from the big, complete, strictly quality Crane line—industry's first choice for over a century.

YOU'LL WANT a copy of "Valve Performance Facts"—32 case histories covering valve installations throughout industry. Contact your local Crane Representative or write Crane Co. at address below.

CRANE VALVES & FITTINGS

PIPE • PLUMBING • KITCHENS • HEATING • AIR CONDITIONING

Since 1855—Crane Co., General Offices: Chicago 5, Ill. Branches and Wholesalers Serving All Areas



Modernize with EHRSAM Electric Elevators and Belt Manlifts

Safe, low-cost installation and operation that will improve employee efficiency up to 50%. This inter-floor transportation is economical for any plant with two or more stories.

All components factory assembled and pretested for easy installation. Standard speed of Electric Elevators is 90 ft./min.; for special applications speeds of from 50-120 ft./min., are available. Standard speed of Belt Manlifts is 75 ft./min.; for special applications speeds of from 50-80 ft./min., are available.

Ehrsam Electric Elevators and Belt Manlifts conform to the requirements of the American Standard Safety codes, all local and state codes.

ELECTRIC ELEVATORS

Push-button, car-type for 1 to 6 passengers. Easy to run, inexpensive to install and operate.

BELT MANLIFTS

Step-on type vertical endless belt manlifts for simultaneous traffic in both directions.

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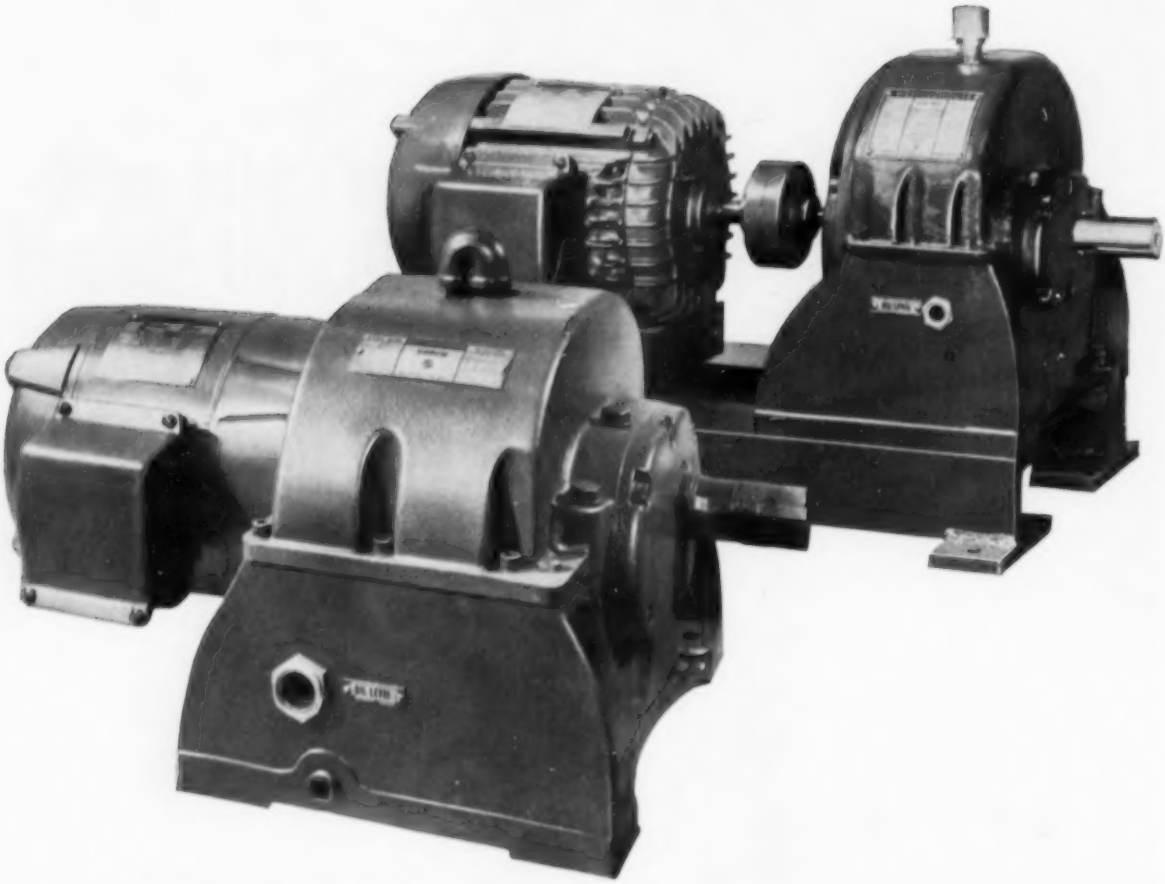

GEARMOTOR OR PACKAGED DRIVE?

Your selection has a longer future with Westinghouse BPT gearing

Westinghouse gearmotors and DB packaged drives offer important advantages to simplify drive problems and provide long-range dependability.

First, you'll find both lines of gearing readily available. They provide a wide selection in horsepower, speed ratios, direction of power take-off, mounting and coupling methods. This sort of flexibility is bound to save you time in answering space and load problems.

Second, Westinghouse BPT gearing, in both lines, assures a long-range solution to any drive problem. The exclusive BPT heat-treatment process produces unmatched, long wearing, shock-resistant qualities as a result of taper hardening each gear tooth. Heavy-duty, antifriction bearings also insure continued high efficiency under changing load demands.

Get all the facts on Westinghouse gearmotors and DB packaged drives today from your local Westinghouse salesman; or write Westinghouse Electric Corporation, 3 Gateway Center, P. O. Box 868, Pittsburgh 30, Pennsylvania.

J-07351

Exclusive BPT heat-treatment produces a taper hardness from surface to core of each gear tooth for toughness and hardness.

YOU CAN BE SURE...IF IT'S Westinghouse

BIG CITY • BIG DEMAND

BIG RIVER Solution: Big Pumps

Capacity 50,000,000 gallons a day

BIG VERTICALS—The middle 2 of these 36" single-stage Peerless vertical intake pumps are driven by 150 hp induction motors. The other 2 pumps (same specifications) are driven by wound rotor motors.

BIG HORIZONTALS—These 8 Peerless horizontal single-stage, double-suction pumps are driven by 500 hp motors. Mounted in series, these 22", high service pumps maintain pressure at required standard.

Installed for ST. LOUIS COUNTY WATER COMPANY, NORTH END PLANT, ST. LOUIS, MISSOURI

Intake Pumps: 4 - 150 hp Peerless 36" single-stage vertical turbine pumps.

Booster Pumps: 8 - 500 hp Peerless 22" single-stage horizontal double-suction pumps.

Here's another installation that convincingly demonstrates Peerless' ability to do the complete pumping job efficiently:

vertical pumps for **water supply**
horizontal pumps for **water pressure**

Either way you look at a pumping job—towards horizontals or towards verticals—follow the lead of consulting and water works engineers everywhere. Select Peerless horizontal and vertical pumps from one of the most complete lines of high quality, water handling pumps offered by any manufacturer.

Remember: Peerless builds dependable pumps for *all* water handling services—supplying, circulating, dewatering, drainage and flood control protection—and for all applications—municipal, industrial, commercial and domestic.

PEERLESS PUMPS

PEERLESS PUMP DIVISION
FOOD MACHINERY AND CHEMICAL CORPORATION
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Factories: Los Angeles 31, California and Indianapolis 8, Indiana
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PLEASE SEND PUMP BULLETINS DESCRIBING

☐ Peerless Horizontal Pumps (Bulletin B-1300) ☐ Peerless Vertical Pumps (Bulletin B-505)

NAME _____

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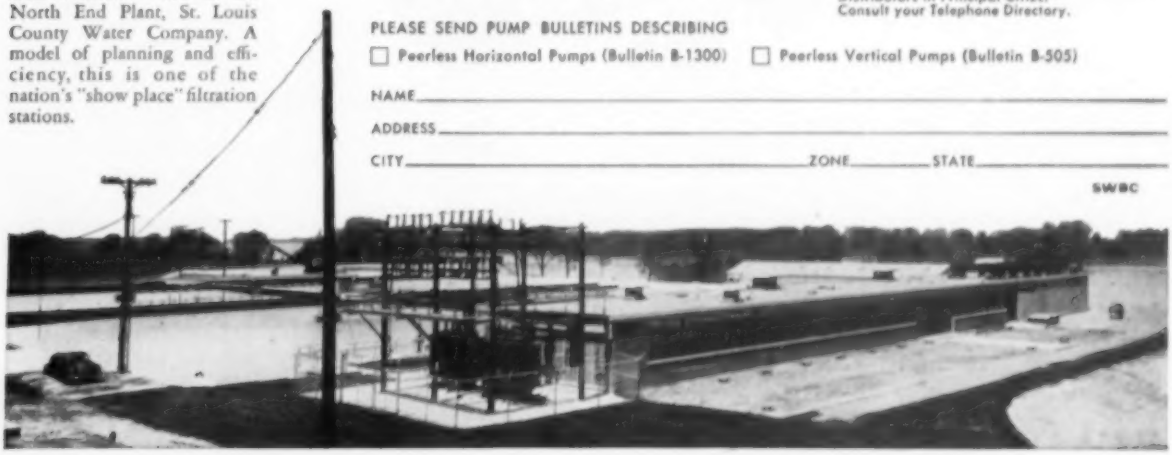
CITY _____ ZONE _____ STATE _____

SWBC

BIG PLANT—View of the North End Plant, St. Louis County Water Company. A model of planning and efficiency, this is one of the nation's "show place" filtration stations.



News for the South & Southwest (Continued)

Rittelmeyer Represents Kybernetes Corporation

The Kybernetes Corporation, Division of Self-Winding Clock Company, Inc., announces the appointment of **Rittelmeyer & Company, Inc.** as their representatives in Georgia, Florida, Alabama and East Tennessee.

The Rittelmeyer organization occupies a modern, two-story, brick structure in the business heart of Atlanta at 150 Nassau St., N.W. The Kybernetes Corporation has main offices in New York City with a factory in Brooklyn.

Kybernetes is a pioneer firm in the field of data logging and monitoring. Advanced techniques, developed originally for the computer industry, simplify the overall system and materially enhance accuracy and reliability. Two per cent accuracy is guaranteed for all inputs including non-linear types, over extended periods. Reliability is high because of the complete absence of mechanical operations except for the normal complement of high quality sealed relays which have a life expectancy in the decades. All Kybernetes equipment is hermetically sealed, further ensuring trouble-free service and providing Class I, Division 2 classification.

Kybernetes loggers and monitors utilize the electronic approach to data sensing. Monitoring or scanning is accomplished at a rate of five points per second, logging at a rate of about two points per second. Logging is normally by typewriter at scheduled intervals, however logging can be had on call to observe process action at any time. Also direct visual reading of any point can be obtained on call either on high speed printers or visual indicators.

Punched tape or cards can also be incorporated in systems to render data in "machine language" for further computer calculations. Alarm set points can also be established to give warning of off-normal conditions.

The type of data to be observed is limited only by the desires of process operators. Flow, pressure, temperature are the more usual requirements; however, vibration, weight or flow integration, levels and a variety of other supervisions can be had.

John M. Rittelmeyer started in business as a manufacturer's representative in Atlanta in 1925. The company, from its beginning, has handled top quality accounts, and the careful policy of representing organizations of the highest reputation has inspired customer satisfaction and resulted in company growth through the years.

Choose from the improved DH Line of Dean Hill horizontal turbines which give you up to twice the power of earlier models while maintaining the same economy of operation.

The major change contributing to this tremendous power increase is the addition of steam nozzles to all models. On types now built with two nozzles—DH-10, DH-15, DH-20, DH-25—this change has meant *a 100% increase in the maximum horsepower of each unit!* On new three-nozzle models—DH-30, DH-35, DH-40, DH-45—the rated increase in maximum horsepower is 50%!

Why not get the complete power picture of Dean Hill's improved DH Line of horizontal turbines? Write today for Turbine Catalog, No. 500.

DEAN HILL PUMP COMPANY
Pump and Turbine Engineers Since 1893
Indianapolis 7, Indiana

OFFICES IN PRINCIPAL CITIES

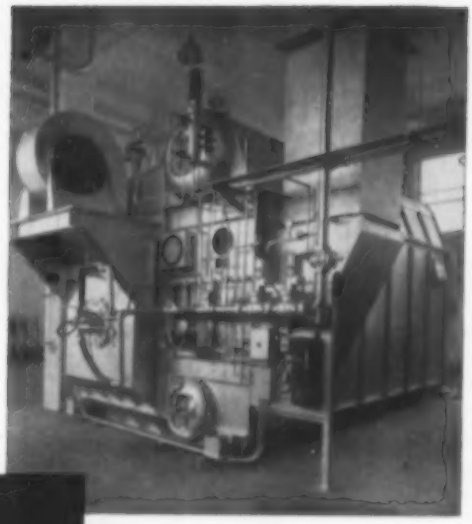
Walworth—Houston

William M. Combs has been appointed vice president of the Gulf Division of the **Walworth Company,** leading manufacturer of valves and fittings, according to Fred W. Belz, president.

Mr. Combs joined Walworth in 1926 as a field representative in engineering sales and subsequently served as manager of the Oklahoma Division, Gulf Division and as Central Division manager.

(*Continued on Page* 28)

packaged power for limited space requirements . . .



KEELER

Type D-K

a comparatively wide and short boiler incorporating the proven efficiency and economy of Keeler Water Tube Steam Generators in a compact, low cost unit

Where boiler room space is definitely limited, the KEELER TYPE D-K Water Tube Package Steam Generator is the answer to your problem! It's a comparatively wide and short boiler for use where long boilers of other types cannot be accommodated.

KEELER TYPE D-K Package Boilers are made in oil or gas fired units with capacities from 8000 to 45000-lbs. of steam per hour—standard design pressures of 200 psi and maximum design pressures of 500 psi. The furnace sides, roof and floor, as well as front and rear walls, are water cooled and insulated. The complete "package", ready for quick hook-up and operation, includes all burning equipment, controls, safety devices and accessories.

For a low first cost, low operating cost outfit, you'll want the full particulars on this compact Package Power Plant! Write or phone . . . there's a KEELER representative at your service in your locality.

Write For Bulletins

No. DK-1: Type DK Package Boilers
No. P-14: Type CP Package Boilers
No. M-2A: Type CPM Package Boilers
No. MK-1: Type MK Boilers

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KEELER WATER TUBE *Boilers*

For Fly Ash Collection, here are 3,370 REASONS WHY

You're Years Ahead with MULTICLONE

The tabulation sheet shown here is over 40 feet long, filled top to bottom with single-spaced typewriter listings as shown in the enlarged section above...

- Each typewritten line tabulates an installation of Multiclone equipment—an installation of from one to nine separate Multiclone units!
- These installations have been made in all parts of the world, in plants operating under widely-varying load, atmospheric and fuel conditions!
- They include installations on virtually every type of steam power plant (i.e. pulverized coal fuel boilers, spreader stoker boilers, chain grate boilers, underfeed stoker boilers, etc.)

New Multiclone installations are being made every day, but at the time this tabulation was made there were 3,370 Multiclone units giving superior service to industry throughout the United States, Canada and other countries.

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EUTECTIC Welding News

PLANT, RESEARCH LABORATORIES and WORLD HEADQUARTERS

Published by EUTECTIC WELDING ALLOYS CORPORATION 40-40 172nd STREET, FLUSHING 58, NEW YORK, N. Y.

"EUTECTIC" WELDING HEADLINES • TIME-MONEY-MACHINERY SAVERS

XYRON 2-25 REPAIRS RR DIESEL ENGINE SAVES $10,800, WEEKS OF DOWNTIME

A large break in the first cylinder of a 600 horsepower diesel engine almost resulted in the loss of $10,800 by a Midwestern railroad. Attempts to repair the engine with conventional high heat welding materials failed because the block was thoroughly dirt and oil soaked and its tremendous size made pre-heating impossible.

Fig. 1

The railroad's maintenance foreman was ready to recommend scrapping the engine when Eutectic's District Engineer suggested welding with patented Xyron 2-25, "Eutectic's" newest and most advanced electrode for all types of grey and alloyed cast iron. Xyron 2-25 is usable fast and cold and is the first non-cracking, porosity free, all position electrode for cast iron.

Fig. 2

Repair was begun by veeing out all broken surfaces with Eutec-Chamfer-Trode, high speed gouging electrode for all metals. (Fig. 1) Gouging with ChamferTrode provided a good surface for deposits of Xyron 2-25 and burnt out many of the impurities in the casting. After the broken parts were reassembled on the engine block, Xyron 2-25 was used to tack weld. (Fig. 2).

Welding machine was set at 100 amps, DC reversed. The weldor then used a stringer technique with short arc to deposit 2" passes of Xyron 2-25. Peening after each pass relieved stress and slag was easily removed.

Final results were excellent. Xyron 2-25 produced dense, smooth, porosity free deposits at lowest amperages. (Fig. 3) Fast repair with Xyron 2-25 saved railroad $10,800 replacement cost and avoided weeks of downtime. *(A-71)*

HIGHEST STRENGTH JOINTS WITH EUTECTRODE 201

Welded with patented EutecTrode 2101, the aluminum tine joints on this cement block unloader are up to three times stronger than joints of conventional aluminum electrodes. Loads of close to a ton cause the tines to dip as much as eight inches without cracking. EutecTrode 2101 quickly fabricated the block unloader, produced smooth solid deposits with good color match and high resistance to corrosion. The first aluminum electrode with an extruded flux coating, EutecTrode 2101 does not spatter or fume, produces a quiet arc at lowest amperages. EutecTrode 2101 outperforms all conventional aluminum electrodes. *(A-72)*

EUTECTRODE 680 AC-DC AVERTS 10 WEEK STOPPAGE

A Tennessee stamping plant faced an 8-10 week production stoppage because of a cracked shaft on a 340 ton press. Replacement was estimated at $15,000. But downtime was averted and replacement cost saved by using EutecTrode 680 AC-DC and Eutec-ChamferTrode to repair the shaft at a cost of only $37 in materials. Eutec-ChamferTrode, high speed gouging electrode, was first used to vee out the crack, which extended 6" through the 12" shaft. EutecTrode 680, patented high tensile electrode for very high alloy and carbon steels, was then applied. Eutec-Trode 680 welds were applied at lowest amperages. *(A-73)*

In answering industry's requests for technical data, Eutectic's research and engineering staffs help industry save thousands of dollars each year. Your questions, like these below, will be answered without obligation by Eutectic's Technical Information Service.

Q. My company's welding manual makes reference to the use of solder in the repair of lamp socket contacts. EutecRod 157 with Eutector Flux 157 was recommended to us for this application. Will you advise? We would like to incorporate this information in our manual for future use. The fact that this soldering is performed by unskilled personnel should be considered.

A. EutecRod 157 is considered an ideal recommendation. Since this alloy has an extremely narrow plastic range, rapid solidification takes place, assuring a good build-up. It is therefore easier to handle by the unskilled. Deposits are harder and have higher electrical conductivity than conventional solders. This means greater resistances to pitting and general wear. Since the alloy has a higher solidus temperature, the possibility of plasticizing the build-up if accidental arcing occurs is virtually eliminated. Contacts also will remain bright and clean since EutecRod 157 does not contain lead or other elements than darken with age. Melting point is approximately 430° F. Electrical conductivity is 18 percent.

Q. What is the electrical resistance of EutecRods 180, 800, and 1804?

A. Electrical resistivity of all three is almost identical in that values of 23/24 microhms per cubic centimeter are obtained on all tests.

Eutectic Warehouse — Service Centers
446 Northside Drive, N.W., Atlanta 18, Ga.
2204 Irving Boulevard, Dallas 7, Texas

Eutectic Welding Alloys Corporation
40-40 172nd Street, Flushing 58, N.Y.

Gentlemen:

I would like further free information on the following:

☐ A-71 ☐ A-72 ☐ A-73
☐ **Free 170 page pocket Welding Data Book**

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EUTECTIC WAREHOUSE — SERVICE CENTER • 2204 IRVING BOULEVARD, DALLAS 7, TEXAS

COOLING TOWER POWER GOES HIGH HAT

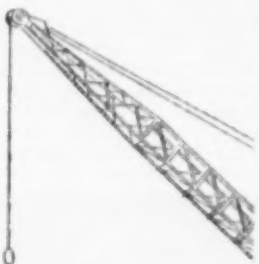
Putting the fan cylinder to work, making it a functional part of the tower, is Marley's latest achievement that brings a new look to industrial cooling towers. As an integral part of Marley tower power the new **VL** (vertically laminated) **Fan Cylinder*** has a job to do beyond merely discharging exhaust vapor at high elevation to minimize the hazard of fogging . . . IT AMPLIFIES FAN EFFICIENCY AND COOLING PERFORMANCE.

The distinctive **VL** contour is dictated by tested, scientific design that increases air volume by recovering velocity pressure . . . simply making more air do more cooling. To engineers specifying new equipment, this is an added and important assurance of Marley's ability to deliver full, testable performance on every cooling tower installation.

As modernization equipment for existing towers, **VL** fan cylinders positively reduce water cooling cost in any of three ways:

1. Cooling a greater volume of water at specified temperatures without added fan horsepower.
2. Cooling specified volume of water at specified heat load to lower temperature without added fan horsepower.
3. Reducing required horsepower for any specified performance.

VL fan cylinders are safe, sturdy units. Laminated construction provides a rugged design which assures long, trouble-free service. Bolted laminated bands and integral truss bracing result in a unitized packaged assembly independent of tower framework for structural stability. Safety to operating personnel is provided by the strength and height of the cylinder and by the large access door permissible only in **VL** design.



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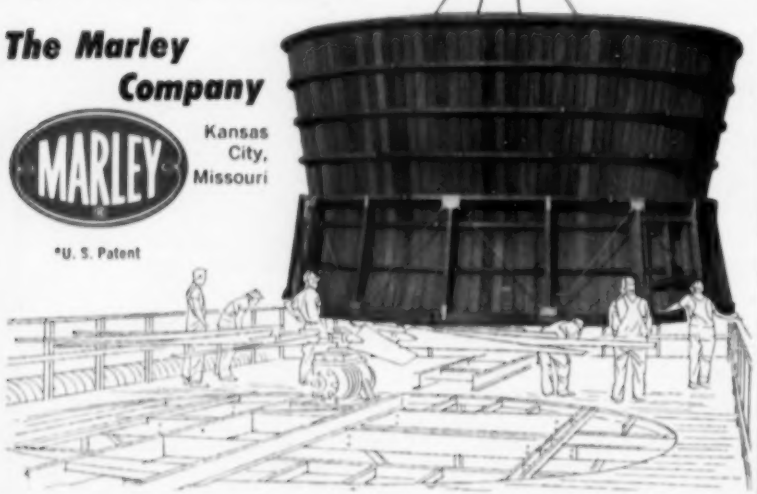


The Marley Company

MARLEY

Kansas City, Missouri

*U. S. Patent

News (Continued)

Anderson Chemical Appoints Mills to Technical Staff

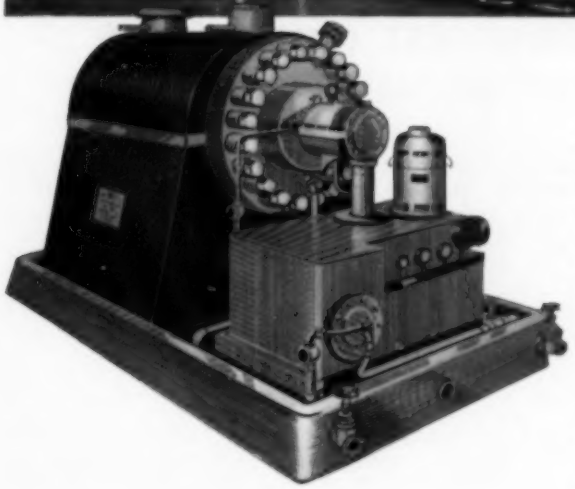
Richard H. (Dick) Mills who recently joined the **Anderson Chemical Company**, Macon, Georgia, is slated to take an active part in a dual program of expansion in laboratory facilities and personnel, and in field representation throughout the Southeast. Anderson Chemical Company now has service representatives working from fourteen cities and covering all or parts of ten Southern states.

Mills has been actively engaged in the field of water chemistry and water treatment since his graduation from the University of Florida. He specialized in water chemistry, studying under Dr. A. P. Black, a man of national prominence in this field.

His experience began as a quality control and trouble-shooting chemist for The Coca-Cola Company. During the four years spent in the field for this company he gained considerable experience in dealing with diversified water treatment problems over the Southeast and Midwest. For a period of a year following his field work, Mills was Chief Chemist for the Orlando Utilities Commission.

Mills then became Chief Chemist for Black Laboratories, a firm of consulting chemists and engineers specializing in municipal and industrial water development and treatment. During the four years with this firm he directed its laboratory facilities, supervised control of chemical treatment of water for municipal and industrial water and power plants located throughout Florida, and conducted field surveys and engaged in research work for the firm.

(*Continued on Page 94*)



PACIFIC BOILER FEED PUMPS

CONTINUOUS POWER... a *must* in Southern California Edison's giant El Segundo steam station. Three Pacific boiler feed pumps were placed in operation for unit No. 1 in 1955. Two more Pacific pumps were selected and went on the line for unit No. 2 in 1956. The combined generating capacity of the two units is 350,000 kilowatts. These Pacifics, each delivering 685,000 lbs./hr. of 360°F. feed water at 2350 PSIG, unfailingly serve Southern California Edison's El Segundo plant needs. Whenever continuous boiler feed service is an absolute must... then nothing but the best, most dependable service will do... Pacific Boiler Feed Pumps!

Write for Bulletin 122

PACIFIC PUMPS INC.

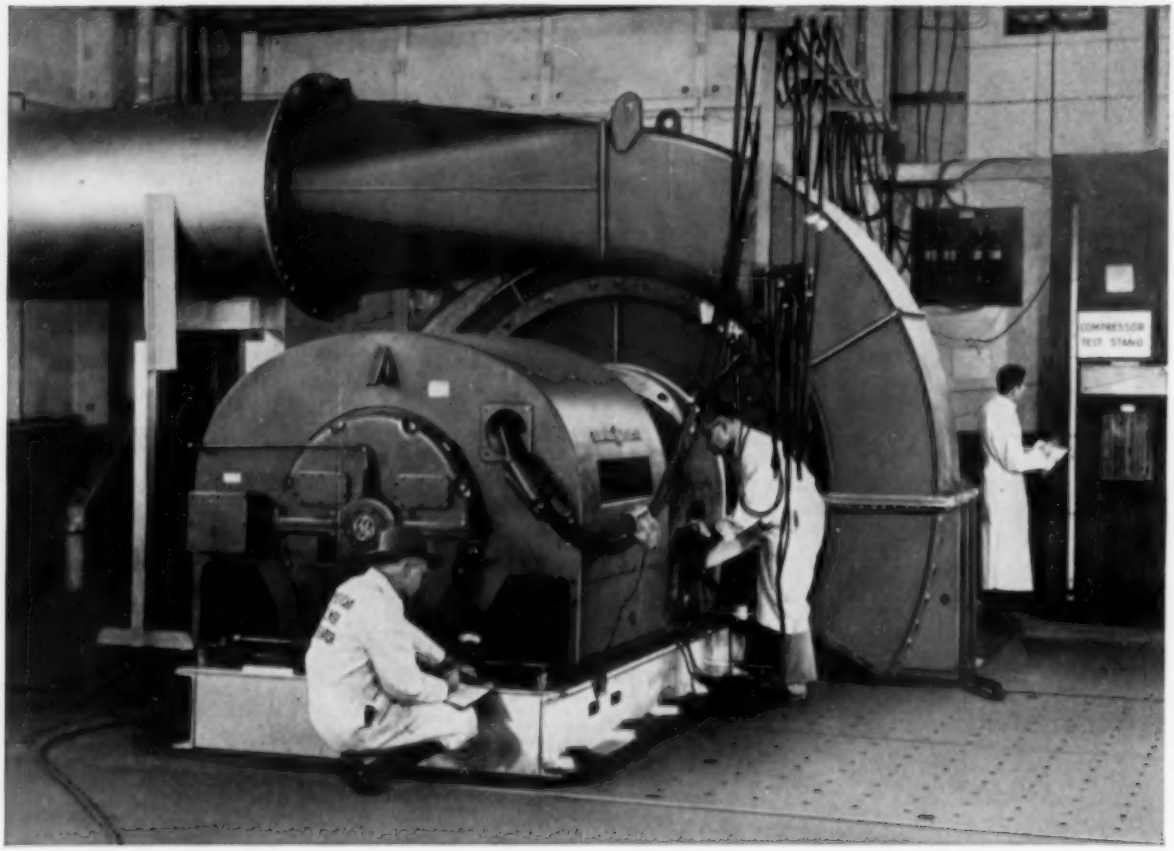
HUNTINGTON PARK CALIFORNIA

Offices in all Principal Cities

PACIFIC

BF-26

Here's the latest air-handling



LABORATORY TESTED CENTRIFUGAL COMPRESSOR DELIVERS 330,805 POUNDS OF AIR PER HOUR!

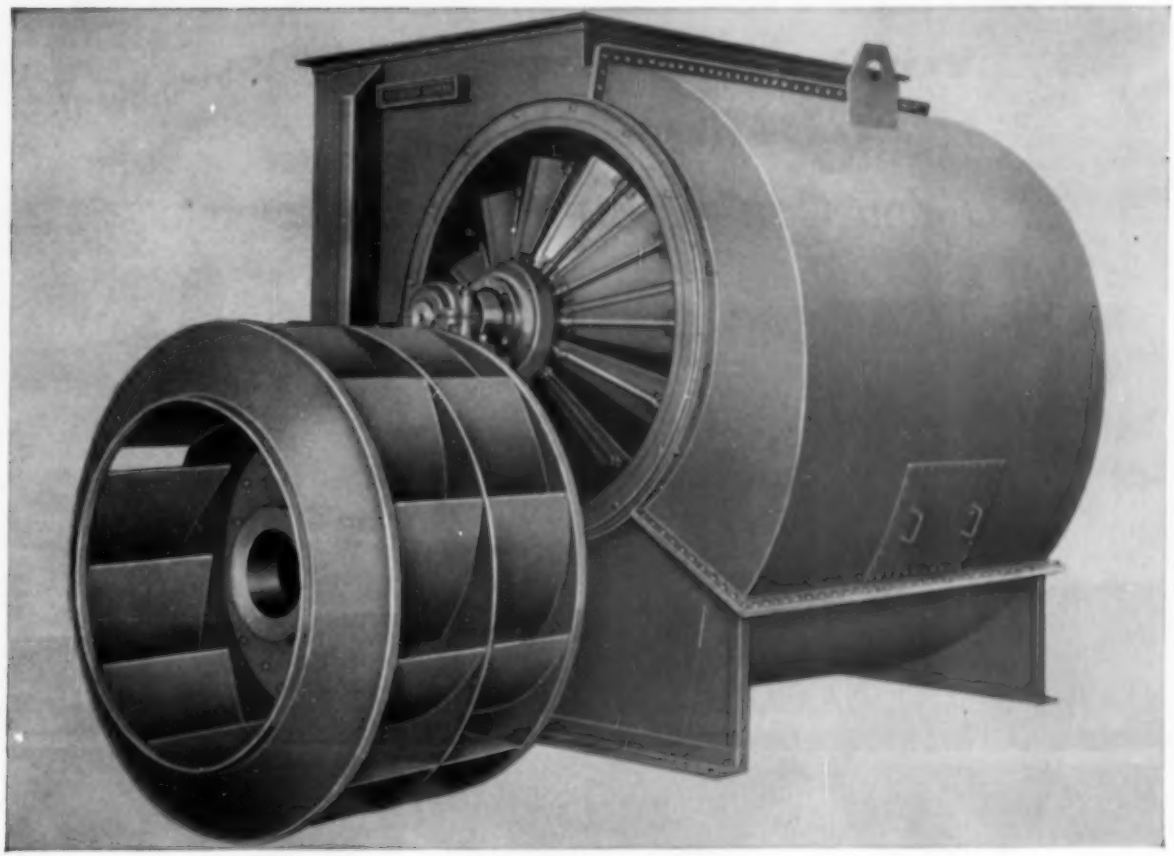
Cutaway of typical American Blower single-stage centrifugal compressor.

With the trend toward higher pressure requirements, American Blower has designed and built centrifugal compressors to furnish air for cyclone fired boilers. These compressors incorporate the use of a horizontally split, welded steel volute casing, variable inlet guide vanes, welded steel impeller of the shrouded type with impeller shaft supported by two journal bearings plus a Kingsbury thrust bearing arranged for positive forced-feed lubrication. This highly efficient compressor is driven by a 1000 HP, 1800 rpm, induction motor, delivers 330,805 pounds of air per hour at a static discharge pressure of 67.5 inches water gauge.

Like every American Blower single-stage centrifugal compressor – 30 to 2250 HP – this compressor has been completely tested in accordance with the A.S.M.E. Power Test Code. Such testing guarantees the mechanical operation and performance of all American Blower compressors.

Outstanding features: (1) Improved scroll-shaped casing design. (2) Unobstructed long diffuser passage converts velocity energy into pressure, contributes to quiet operation. (3) Annulus packing minimizes recirculation of gas around impeller inlet. (4) Removable inlet nozzle for accurate alignment of annulus packing. (5) Aero-dynamic design of impeller blades for high efficiency, long life. (6) Welded-steel baseplate "stress relieved" prior to machining.

equipment from American Blower



AIRFOIL FAN HAS ADVANCED DESIGN FOR HIGH EFFICIENCY, LOW OPERATING COST

Featuring a functionally designed airfoil blade, American Blower's improved Airfoil Fan is the industry's best in the non-overloading-horsepower type of centrifugal fan.

That's because smooth interworking of improved streamline inlets, wheel rims, and housing minimizes turbulence, resulting in higher efficiency, lower power consumption. The non-overloading-horsepower characteristic makes it possible to select a driving motor close to the fan horsepower.

Why not talk to an American Blower sales engineer about *your* requirements. His knowledge of air-handling applications can prove invaluable to you. Call our nearest branch office, or write: American Blower Division of American-Standard, Detroit 32, Michigan. In Canada: Canadian Sirocco products.

Special design of the airfoil blade and matching streamline inlet are the top features of American Blower Airfoil Fan. The dieformed, reinforced, and welded blades are extra strong, extremely efficient. Single- and double-inlet Airfoil Fans are available in many sizes, and for volumes up to 1,000,000 cfm.

AMERICAN BLOWER

Division of AMERICAN-Standard

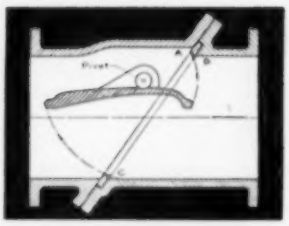
You have to see it to believe it . . .

(You Can't Hear It!)

CHAPMAN Tilting Disc Check Valve

It's the silent valve. No noise, no vibration, no fluttering. On usual piping arrangements you get no slamming with a Chapman Tilting Disc Check Valve. You get no banging to cause damage to system or valve . . . no grinding, scraping or wearing of either the disc or seat. Your maintenance costs go down to an unbelievable low which is really something to see and enjoy.

You can safely use these valves under tough operating conditions. You can order them in iron and steel . . . for handling fluids or gases under a wide range of pressures. You can get them fast. See our Catalog 30-A. Write for your copy today.



Look at this operational chart. When the flow is on, "airfoil" disc is held firmly against stops in the body. When the flow drops, disc balances quietly on whatever flow there is. When flow stops, disc drops quickly, quietly and firmly on special bevel seat. Note that sufficient space is designed around disc to cut down flow resistance.

THE CHAPMAN VALVE MANUFACTURING CO.
INDIAN ORCHARD, MASSACHUSETTS

TIMELY COMMENTS

You Asked For It

SPI EDITORS have just received results of a study made to find out exactly what types of articles their readers want — what subjects, what sources, what form.

Over two thousand engineers, executives and department heads among SPI readers throughout the South and Southwest took the time to study our questions and state their preferences and desires.

THE INTERESTS of SPI readers are wide and deep. Subjects of greatest interest include: Plant Descriptions, Personnel, and Maintenance. Seventy to eighty per cent of our readers want articles on each of these general subjects.

Marked individual interest was also evidenced in such specific subjects as: Piping & Accessories, Materials Handling, Air Conditioning, Pumps, Compressors, Fans, Instruments, and Controls. Each of these specific subjects seems to be of direct interest to about half of the readers, even though actual responsibility for these plant components is undoubtedly limited to a smaller number.

WHO'S WRITING and how he writes also is important to the readers. Most of the 2000 indicated that they like articles direct from men-in-the-plants, explaining exactly how plant improvements are made. They don't want a lot of unnecessary words; yet about half said, "Give the complete story, even if the article has to be long." They didn't all rise to the bait of "Lots of Pictures," and preference for articles that "Hit the High Spots" was not as great as we had believed.

Apparently, plenty of plant men can still find time to read and digest detailed technical material if it will help them on their jobs. The accompanying tabulation of preferences as to source and "packaging" of articles is particularly interesting.

THE KINDS OF ARTICLES DESIRED

Detailed descriptions of subjects, even if articles are long	49%
Short articles that hit the "high spots"	63%
"From-the-plant" articles by plant executives and engineers	80%
Articles by independent technical authorities	54%
Articles by specialists on staffs of manufacturers	58%
"How-to-do-it" type articles	72%
Articles with lots of pictures	59%
Facts and figures presented in chart form	57%
As much local and regional news as possible	54%

THOSE WHO REPLIED are busy men holding important position in Southern and Southwestern plants. Considerable thought and effort were required to give the answers requested. The information provided will help SPI to better serve its readers.

THANK YOU ALL, especially those who turned the sheet over and wrote us a personal note. The many compliments made us happy — and believe-it-or-not, there were no brickbats. Many spelled out their desires and suggestions in some detail, and that is a real help.

You were kind to give us a push in the right direction. We will be trying hard to give you what you want. Write to us now and then to let us know how we are doing.

Francis C. Smith, Editor

BORDEN MANUFACTURES EVERY TYPE FLOOR GRATING

IN FERROUS AND NON-FERROUS METALS

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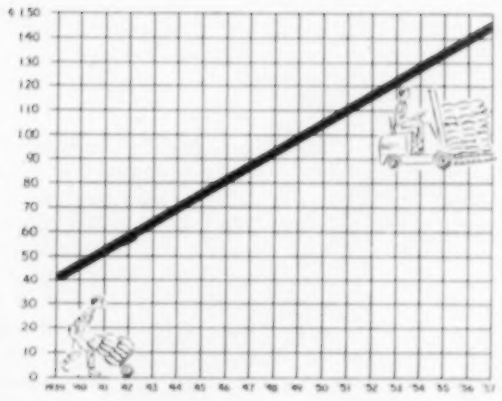
INDUSTRY SPEAKS



Wage rates below the Mason & Dixon line have skyrocketed since 1939. To offset gains in labor costs Southern manufacturers are increasing use of materials handling equipment to increase worker productivity.

Automation and Materials Handling

Abstracted from comments by R. W. ROBERTS, Manager of Distributor Sales for WHITING CORPORATION at the Materials Handling Short Course conducted by GEORGIA TECH.

HIGH COST of material handling —about 25% of the cost of a manufactured product today is the expense of moving it from place to place—has definitely increased interest in automation. But we cannot honestly say that we have noticed a wholesale swing towards this method of operation.

The trend has not been more pronounced because the full potentialities of automation are not yet understood by prospective users, and because the equipment manufacturers have not capitalized to the fullest extent upon the qualities in their equipment which would make it suitable for automatic operation.

Every example of automation is a custom-designed installation. Every plant is different physically and has a different handling problem so that automatic equipment must be designed specifically to suit it. In order to successfully automate, the operation must be of a repetitive nature, the same type object being moved through relatively the same sequence of operations, over and over again.

One heavy industrial crane in a large chemical plant is required to work in an area from which all workmen are excluded. It was necessary for the cranes to travel to any one of a number of points in a building to perform any or all of several operations — locate the hoist over a specific point, lower a grapple, and make contact with the load to be lifted, pick up the load, deliver the load to another point, and return to the starting point.

As might be expected, an installation of this kind is expensive. Yet, by virtue of the company's requirements, an automatic system of some kind had to be devised, and the cost was of secondary importance.

The future of automation is bright. Certainly the potential is there. But before it can take its rightful place in the American industrial scene, considerable groundwork must be laid.

Of prime importance is education. Potential users of automatic equipment must first be made fully aware that such a thing as automation exists. They must then be shown its advantages and how it can fit into their own plants profitably. They must see examples of how automatic facilities are being utilized in plants similar to their own.

In the meantime, as equipment manufacturers, we must continue to be on the alert for ways of further improving existing automatic equipment and must strive to develop new facilities of this kind. This increased work with automation, too, will reduce the cost of the specialized equipment. Our automatic cranes for that chemical plant, for example, will not be nearly so expensive the next time because of the important knowledge gained in producing these pioneering units.

In actually planning for auto-

(Continued on Page 105)

Texas Production Engineer Discusses . . .

Gas Turbine Performance . . .

PART 1 – OPERATION

A SUMMARY of West Texas Utilities Company's gas-turbine generating experience covering operation and maintenance during the period between 1952 and 1957. This first article discusses operation. Maintenance will be covered in a later issue.

THE WEST TEXAS Utilities Company is installing a second gas turbine generator in the Fort Stockton plant after four years experience with gas turbine generators. The new unit will be a duplicate of the existing machine which was placed in service in December, 1952, Fig. 1, as an independent plant.

The Girvin unit, Fig. 4, was placed in service in May, 1954 and is an application of a combustion gas turbine to the cycle of an old steam plant. The turbine exhaust gases pass through a recuperator to heat the boiler feedwater to the boilers which increases the gas turbine efficiency 4% at full load, Fig. 5. However, this arrangement will be changed when a new 33 mw steam unit is placed in service in April, 1959.

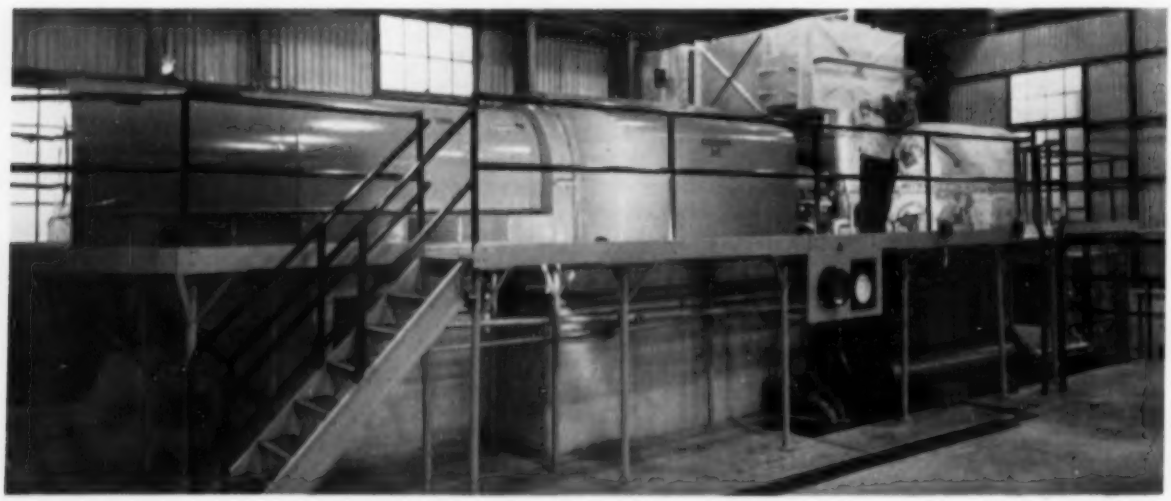
To take advantage of higher efficiencies obtainable, the gas-turbine exhaust will then be used as combustion air for the boiler serving this new 33 mw unit. This will result in a 7% improvement in cycle efficiency over the conventional steam cycle.

Both of these units are simple-cycle type gas turbines which require a minimum of cooling water and auxiliary equipment. The turbines are coupled directly to the axial-flow air compressors and drive the generators through reduction gears at 3600 rpm. The turbines are fired with natural gas as fuel and require 150 psi gas pressure at the throttle valve. Since these units are different in most other respects, they will be discussed separately, unless otherwise stated.

Fort Stockton Operation

The Fort Stockton unit's basic rating is 5 mw at 80 F ambient temperature and an altitude of 1000 ft. It is operated up to 7.0 mw at 3000 ft elevation when the ambient temperature and compressor cleanliness permits. The

Fig. 1 — The existing Fort Stockton unit placed in service Dec., 1952.



...4-Year Report

By A. R. COX
Production Department
West Texas Utilities Company
Abilene, Texas

Fig. 2 — The 1952 Fort Stockton unit, showing details of turbine and compressor.

five-stage turbine and the 16-stage axial-flow air compressor, Fig. 2, are coupled together and operate at 5700 rpm.

The compressor ratio is 6:1 and delivers air at the rate of 111 lb/sec at full load. The air washer and precooler is a spray-type installation using 58 F well water. The system incremental loading schedule base loads this Fort Stockton unit because of the low-cost gas supply.

Fig. 3—Map showing service area.

This unit was placed in service in December, 1952 and has operated 26,603 hr (Table 1) of the 32,850 total installed hr. The 6,152 unserviceable hours are somewhat misleading and therefore will be studied further.

Table 2 shows these unserviceable hours, by years, broken down into four groups. For the years 1953-54, 3540 hr of a total 4811 unserviceable hours, better than 73% can be classified under the heading, "Modification, Inspections and Waiting for Material."

The two major outages were the blade burnout during the second month of operation and the reduction-gear failure a year later. Both of these outages occurred in the process of running tests in connection with modifications, and the unserviceable hours are included under modifications.

The remote location of the unit with respect to manufacturer's facilities contributed to the delays in replacing and repairing equipment, along with the fact that this Fort Stockton unit was the first gas-turbine generating installation the manufacturer and customer had undertaken. These explanations also can be applied to the apparently excessive overhaul hours, which will be discussed in detail in the section dealing with maintenance.

The "Forced Outages" as shown in Table 2 are explained as follows:

1953	1.	Combustor basket holders	31.56 hours
1954	1.	Electrical control	12.83 "
	2.	Mechanical starting control	9.00 "
1955	1.	Mechanical starting control	4.20 "
1956	1.	Electrical relay	16.00 "

The air compressor has operated from 700 to 4084 hr between washings; however, it has been found desirable to wash the compressor every 800 to 1000 hr under normal operating conditions.

Carbonaceous materials appear to be responsible for a large percentage of air compressor fouling (Table 3). Oil vapors from any of several sources such as oil vapor pump discharge, unit bearings, reduction gear, gas separation tank drains, and possible recirculated stack gases. The design

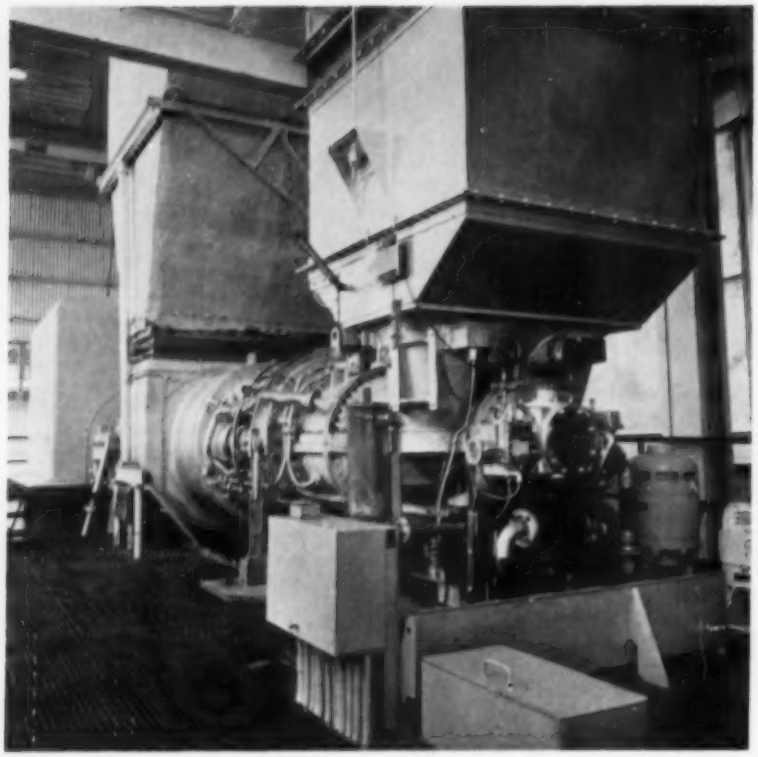


Fig. 4—The Girvin unit was placed in service in 1954 and is applied to the cycle of an old steam plant.

and layout of equipment should minimize entry into the compressor of these materials because carbonaceous deposits build up faster and do not wash off as easily as dirt and water mineral deposits.

The filter pads in the spray-type air washer are changed, with the unit in operation, approximately every 1000 hr; however, recent experience indicates that the filter pads can be used as long as 2000 hr with favorable conditions prevailing. Favorable conditions include few dust storms, and good pH control of the air-washer water. An automatic pH controller was installed recently, and longer life of the filter pads is anticipated. Addition of hexametaphosphate to the air washer and cooling system appears desirable for reduction of scaling, corrosion, and filter fouling.

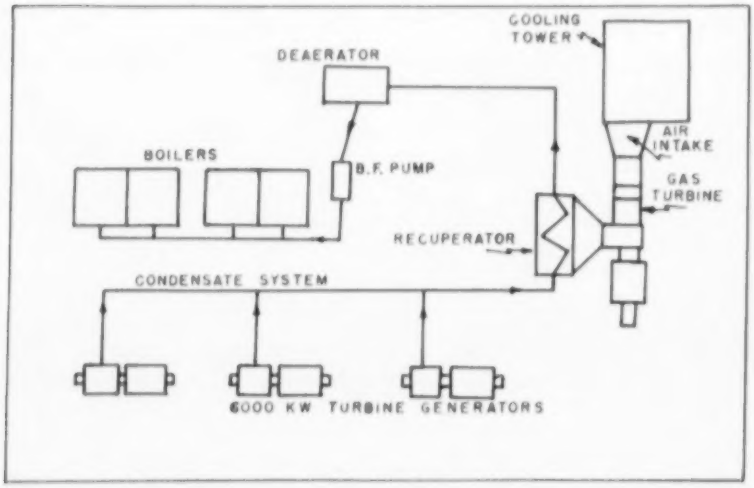


Fig. 5—The present cycle of the Girvin unit shown here will be changed in 1959 when a new steam unit is installed.

Table 4 shows some average operating data for April and August by years. April was chosen because the average load of 6220 kw for that month in 1955 is the highest average load month for the Fort Stockton unit to date. The average inlet and exhaust temperatures were 1317 F and 754 F respectively. The design temperature limits are 1350 F and 760 F, hence the unit operated at near maximum capability the entire month. The 6220 kw average for the month is 24% above rating since the full load rating is 5000 kw at the average inlet temperature of 66 F and 3000-ft elevation. The average heat rate of 17,000 Btu/kwh for the month is over 10% better than the manufacturer's guarantee.

The operating personnel at Stockton consist of four operators, one man per shift with a relief man, and the chief engineer. When the second unit is placed in operation the plans now are to add a maintenance man to the plant personnel.

Girvin Unit Operation

The Girvin unit was purchased as a 4 mw unit with the reduction gear rated at 5 mw. Later the unit rating was increased to 5 mw. However, the reduction gear had been manufactured already, therefore, the reduction-gear design limits the maximum allowable load to 5 mw. Otherwise the unit could be operated at some higher load under favorable conditions.

The 2-stage impulse turbine and 15-stage axial-flow air compressor are coupled together and operate at 6900 rpm. The compressor ratio is 6:1 and delivers air at the rate of 98 lb/sec at full load. Turbine-inlet and exhaust temperatures are limited to 1400 F and 860 F respectively.

The air washer and precooler is an induced-draft direct-contact-type cooling tower installation

TABLE 1
SERVICEABILITY

Date Year	Total Installed Hours	Serviceable Hours	Unserviceable Hours	Operated Hours
FORT STOCKTON UNIT				
Dec. 1952	714	672	43	672
1953	8,760	5,298	3,462	5,298
1954	8,760	7,411	1,394	7,411
1955	8,760	8,296	464	8,236
Aug. 26, 1956	5,856	5,021	834	4,986
TOTAL	32,850	26,698	6,152	26,603
GIRVIN UNIT				
May 18, 1954	5,318	4,253	1,064	4,202
1955	8,760	7,922	838	6,190
Aug. 26, 1956	5,856	5,709	147	3,834
TOTAL	19,934	17,884	2,049	14,226

TABLE 2
TABULATION OF UNSERVICEABLE HOURS

Date Year	Modifications Inspections and Waiting For Materials Hours	Overhaul Hours	Forced Outages Hours	Other Scheduled Outages Hours
FORT STOCKTON UNIT				
Dec. 1952	43			
1953	2,792	613	31	55
1954	748	436	22	164
1955		394	4	66
Aug. 26, 1956		776	16	42
TOTAL	3,583	2,219	73	327
GIRVIN UNIT				
May 18, 1954	1,033			31
1955	321	249	33	243
Aug. 26, 1956	65		23	59
TOTAL	1,419	249	56	333

which also cools the water for the unit heat exchangers. The make-up water is cold lime-softened well water. The 325-gpm auxiliary circulating pump returns the heat-exchanger water to the top of the tower to cool the water as well as wash and cool the turbine-inlet air. During the summer months an auxiliary circulating pump is used to circulate additional water over the tower in order that the air might be cooled sufficiently.

The cooling-tower installation has filter pads at the air-duct inlet to further prevent carryover and subsequent fouling of the compressor. These pads are changed out every 4000 to 5000 hr of operation.

The systems incremental loading schedule kept this Girvin unit off the line more than 25% of the time during 1954 and 1955; however, starting in the spring of 1956, the plant has been base-loaded.

This unit was placed in service in May, 1954 and has operated 14,226 hr (Table 1) of 19,934 total installed hours. Here again the unserviceable hours 2,049 are seemingly high; however, the remoteness of location, along with the manufacturer and customer's inexperience with this type equipment, largely explains the unserviceability, as was the case with the Fort Stockton unit. Table 2 shows only 56 hr forced outages after separating out the unserviceable hours for modifications and scheduled outages.

The "Forced Outages" as shown in Table 2 are explained as follows:

1954 0 hours

1955
1. Flame detector intermittent cable ground 4.20 hours
2. Lube oil pressure trip switch 18.23 hours
3. Change lube oil because of foaming 8.38 hours
4. Packing a combustion chamber gland 2.10 hours

1956
1. Repair stop valve 17.00 hr
2. Three relay burn outs of about 2 hr each 6.22 hours

TABLE 3 LABORATORY REPORT OF COMPRESSOR DEPOSIT

FORT STOCKTON UNIT
DATED 2-1956

Carbonaceous Material	45.44%
Silica	19.09%
Lead Oxide	.67%
Iron & Aluminum Oxide	18.53%
Calcium Oxide	4.64%
Magnesium Oxide	1.34%
Sulphate	None
Phosphate	.43%

TABLE 4 FUEL ECONOMY AND CAPABILITY

FORT STOCKTON UNIT

Date	Average Load KW	Average Heat Rate Btu/Kwh	Make-Up Water G.P.M.	Average Operating Data: Inlet Air °F	Exhaust °F	Turbine Inlet °F
April 1953 (1)						
April 1954	5,520	17,590	19.5	58	755	1,274
April 1955	6,220	16,980	22.5	66	754	1,317
April 1956	6,100	17,000	9.7 (3)	54	743	1,289
August 1953	4,600	18,800	24.6	69	746	1,275
August 1954	5,250	18,157	17.7	76	758	1,298
August 1955	5,000 (2)	19,047	21.0	77	760	1,295
August 1956	5,550	18,000	11.5 (3)	71	750	1,294
Entire Period of Operation	5,213	17,600		64	743	1,276

(1) Not a representative month because of low operating hours.
(2) Compressor operated 4,084 hours without washing.
(3) Make-up water changed from making up at both the cooling tower and air washer basin to make up only to the air washer basin and overflow to the cooling tower.

GIRVIN UNIT

Date	Average Load KW	Average Heat Rate Btu/Kwh	Average Heat Rate With Recuperator Btu/Kwh Net	Average Operating Data: Inlet Air °F	Exhaust °F
April 1955	4,950	19,200	15,300	63	743
April 1956	5,040	20,300	15,800	64	783
August 1954	4,940	21,000	16,600	80	815
August 1955	4,860	19,000	15,600	78	823
August 1956	4,910	20,700	16,600	76	845
Entire Period of Operation	4,937	19,900	16,800	66	785

Gas Turbine Performance (Continued)

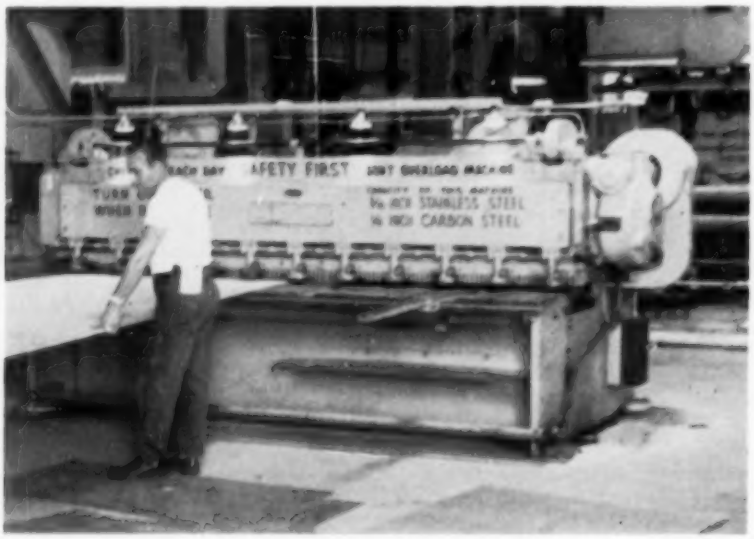
The Girvin unit's air compressor has operated over a wide range of hours between cleanings; however, it is desirable to clean the compressor every 1000 to 1200 hr under normal operating conditions.

Table 4 shows the average load to be 4937 kw for the entire period of operation and the average heat rate of 19,900 Btu/kw is 10% better than the manufacturer's guarantee.

Operation of this unit is carried out by the regular operating crew for the steam plant. No new personnel was added when the gas turbine was installed.

The induced-draft direct-contact-type cooling tower serving the dual purpose of air washing and supplying heat-exchanger cooling water has proved to be a more economical and desirable installation than the spray-type air washer and separate cooling tower. Therefore the induced-draft tower will be used with the No. 2 gas turbine at Fort Stockton when it is installed next year.

Operating cost rates for the gas-turbine generators are less than comparable figures for medium to small steam generating plants. In addition to being a sound economic investment the characteristics of the gas turbine lends itself well to power production either as an independent plant or in a combined gas-steam cycle.



Machine Markings Highlight Safety

MACHINE tool designers shudder when they see what happens to their aesthetic creations at W. L. Rives Company, Jacksonville, Florida. Here's a company that specializes in the fabrication of stainless steels, monel, Hastelloy, Inconel, Carpenter 20 and other difficult to work metals which require the finest forming, cutting and other metal working equipment.

Like most job shops it has to be ready for anything, and just about every new job is due yesterday. Machines must be set for action at all times and operators must know what they're about without taking time out to look it up in the book.

Most machine designers specify instruction plates which provide safety and application facts . . . but it is a rare designer indeed who goes so far as to put the information where you can't possibly miss it and where it will keep reminding you of the right procedure every time you look at the machine.

Here's where W. L. Rives takes the bold approach and sees to it that vital safety and operational data can't be overlooked. All machines are painted with Pittsburg's Dynamic Colors for eye ease and safety . . . and then the major safety points are painted in red, at eyelevel, directly on the flat surfaces. Operation notes are painted in black. The result: an outstanding safety record, better machine service, lower maintenance and faster, more accurate production with much less scrap and more uniform quality.

By George Black (Fla.)

Materials Handling

THE PRINCIPAL purpose of early materials handling equipment was to relieve people from onerous tasks. Then reduction in man-hours became important as wages increased. Crude devices (apologies to the mule) served these purposes very well and contributed much to industrial progress.

But with the motorized production line and automation, EFFICIENCY in materials handling became important. And here we use EFFICIENT in its broadest sense:

1. Economical use of capital
2. Conservation of space
3. Best processing convenience
4. Cleanliness of area
5. Minimum injury to product
6. Better production control
7. Low power requirement
8. Low noise level.

So, with these many important requirements we now have materials handling engineers, handling associations, and handling equipment shows. The old mule-and-wagon was the ancestor of a highly technical, exacting branch of industrial engineering.

Plant engineers that fail to recognize the finer points of present day handling technology are wasting company money.

There are several "flags" that signal materials handling neglect: high labor cost, noise and dirt, poor safety record, excessive product rejects, and high power consumption.

Of these danger signals, high power consumption is perhaps easiest to read.

In most manufacturing plants a large portion of the power is consumed as friction, and very little is used in actual production. There are many exceptions, of course, such as ice making and aluminum reduction. But generally speaking friction is the biggest power hog.

Friction is a big element in materials handling and materials handling is one of the big users of power. So take a look at your kwh per unit of product. If your power cost is high compared to others in your industry, your handling equipment likely needs re-engineering and modernization.

Follow the same general type of analysis with regard to the other "flags" tabulated above, and you will quickly see if you and your associates have failed to look reality in the face.

But don't expect to get maximum results with halfhearted measures. Materials handling merits thorough intelligent study. Anything you do about it affects the entire plant processing procedure. Find out what others are doing, get data on latest equipment, discuss it with all departments—and if necessary bring in a specialist as consultant on design.

The case studies from Southern and Southwestern plants featured on the following pages will give you ideas for "brainstorming" sessions. These reports show how others have solved their problems, and likely you can use many of the suggestions given. But remember, every plant is "unique." Materials handling equipment should be selected to meet specific needs of each individual plant.

Bemis, Tennessee . . .

AUTOMATIC ELEVATORS

Self-Leveling . . . . . Tilting Platform

ABOVE PHOTOS show tilting platform feature, rubber safety shoe on automatically closed car gate, and "Call" or "Send" door operator buttons.

A NEW AUTOMATIC materials handling system is paying dividends at the Bemis Cotton Mill, a plant of Bemis Bro. Bag Company in Bemis, Tennessee. Plant is a typical four floor cotton mill with spinning rooms located on the top floor and weave rooms on the lower floors. This mill, as well as many others, have a common problem in moving materials from the spinning room to weaving rooms, and the return of empty bobbins to the spinning rooms. Although it is not necessarily of an intensive nature, this traffic represents a constant flow while the mill is in operation.

Handling Problem

It is common practice to use ordinary elevators in textile mills for handling the full bobbins from the spinning rooms, these being carried in boxes mounted on small rollers. The empty bobbins are returned from the weave room to the spinning room in the same boxes. With the use of an ordinary type elevator, it is necessary that the elevator be provided with an attendant who will load boxes at the spinning room floor and unload them at the proper weave room level, picking up empty boxes and returning them to the spinning room floor.

Where an attendant is kept on the car, other employees bring the full boxes of yarn to a point adjacent to the elevator and at the weave room level, the other employees pick up the full boxes and distribute the material throughout the floor and return the empty boxes to the elevator.

The amount of traffic to be moved on an elevator that is to be used exclusively for this purpose is not sufficient to really warrant the expense of an attendant, therefore, in a good many mills the individual who collects the yarn in the spinning floor rides the elevator to the weave room floor, unloading at this point and picking up empties that might be available at that level.

New Installation

To provide better service and to eliminate labor handling cost Otis Elevator Company engineers designed and installed two units, one in each end of the mill. The car platform has a sub or auxiliary platform that is hinged at the front. One of Otis' type "O" operators was adapted so that when the elevator arrives at a landing, the operator automatically tips the auxiliary platform so that the boxes in the car run out into a restricted area in front of the elevator.

The shaftway entrances are equipped with power operated bi-parting doors and the car with a power operated car gate. A full set of dispatching buttons and call buttons are provided at each landing to provide full multi-button operation similar to that used on dumbwaiters.

Sequence of Operation

When the "doffer" (employee that takes the full bobbins off of the spinning frames on the

ABOVE — Loaded box arrives at landing, gate opens and platform tilts, running the box out of the car.

RIGHT — Empty boxes are returned from weave room floors in same manner. Note position in which carts stop after running out of the car.

top floor) gets a full box he takes it to the elevator and presses the call button for the top floor. If the elevator is already at the top landing, hoistway doors and car gate open and he loads the box or boxes into the car, then closes the power operated doors and gates by means of the door close button located on the outside. He then dispatches the car to the proper level, or landing, at which point the doors open, the gate opens and the platform tilts running the box out of the car. Empty boxes are returned from the weave room floors in a similar operation.

Technical data courtesy GEO. L. WORD, JR., Sales Engineer, OTIS ELEVATOR COMPANY, Atlanta, Ga. Photos courtesy H. H. FULTON, Manager, OTIS ELEVATOR COMPANY, Memphis, Tenn.

The tilting platform feature was previously mentioned. The platform tilts to a landing to which it is *dispatched*, but not to one where it is called. This is necessary, since the elevator is loaded only when it is dispatched. If the platform tilted when an empty car arrived at a landing, it would only lose time and be an added expense.

One of the requirements of an elevator of this type is the accuracy of stopping at the land-

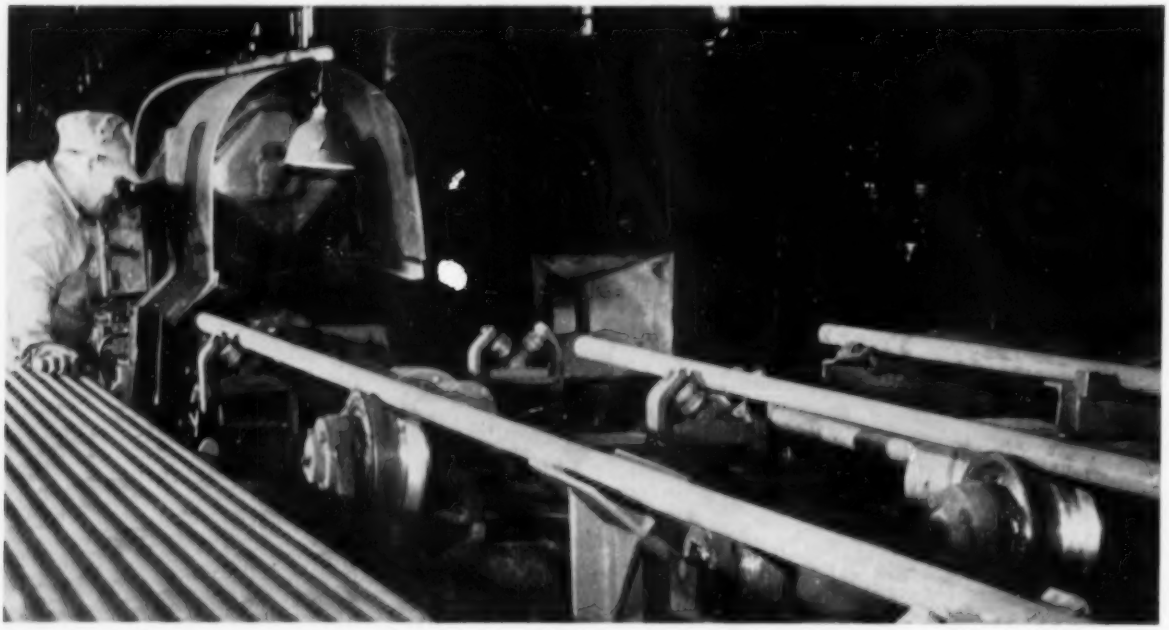
Elevator — Tilting Platform (Continued)

Close-up shows tilting platform and grade level built into each floor landing.

ings. The boxes use relatively small wheels and the utility of the unit would be impaired if the landing was not made in such a manner as to permit the small wheels to readily travel over the intervening gap between the platform and door sills. The use of the Otis automatic self-leveling has adequately fulfilled this requirement.

After arriving at a floor and discharging its load, the doors automatically close so that the car will be available for service. With this arrangement it is not necessary for someone to be available to unload the car on its arrival and the space in front of the landing is arranged so as to hold a number of boxes so that a car may discharge two or three times at a landing before someone comes around to pick up the boxes. The power operated gate is provided with a reversing edge and features a sequence operation which requires the car gate to close before the hoistway doors will close.

The equipment details are: platform size 5′ 6″ wide x 7′ 3″ front to back, capacity of 800 lb at 75 fpm, traveling from first floor to fourth floor, a distance of 48′ 0″, serving four landings and four stops each, all openings being on the same side of the car.



Benwood, West Virginia . . .

Magnetic Conveyor Rolls

A TOTAL of only six Eriez permanent magnetic pipe rolls, recently installed on three automatic pipe facing machines at the Benwood (W. Va.) works of Wheeling Steel Corporation are credited with reducing the required number of motor-driven cast rolls from 25 to 6 and with elimination of personnel contact with pipe in this operation.

According to H. N. Lang, general manager of the plant, the non-electric magnetic units are special pipe control and conveyor rolls, produced by Eriez Manufacturing Co. They are being used to convey ½″ to 3″ pipe between the facing machines at a rate of 2,000, 20/21-foot pieces per hour. Because motors subjected to the rough usage common to such equipment require almost constant maintenance, the elimination of 19 motor-driven cast rolls has brought a significant increase in efficiency, as well as a reduction in power costs, to this procedure.

Since the magnetic rolls have been found to eliminate bounce and slippage, manual handling of pipe is no longer required and the potential hazards of this work have ceased to be a factor. This is an excellent example of how magnetic automation may be intelligently applied to materials handling problems.

Louisville, Kentucky . . .

Portable Elevator Handles Barrels

A PORTABLE elevator, designed for use in a hazardous area, ricks whisky barrels to over 12 ft at Brown-Forman Distillers Corporation in Louisville, Kentucky.

Warehouse handlers had to raise 500 lb barrels of whisky to any of six "ricking" levels and roll them into the proper position. Handler had to ride the platform with the barrel. Because of the nature of the product a possibility of explosive fumes existed.

Problem was solved with a portable elevator designed by the Revolvator Co. It has a very low platform lowered height (see photo above) to permit the barrel to be rolled on from the floor and with sufficient underclearance so that it can be freely moved over the perimeter ramp on the front of each storage level opening.

Lower photos show the Revolvator portable elevator in place and an operator on the platform at an upper level, rolling a barrel into the rick. A floor lock prevents unwanted movement of the Revolvator while in use, but the rollers in the base arms and large diameter wheels at the pulling end permit easy movement from one ricking area to another.

Because of the explosion hazard inherent where large quantities of alcohol are handled, special attention was given to electrical equipment, especially the housing design for electrical contractors. Joints of such housings may permit the entry of explosive vapors. The strength of the enclosure must be such that it will contain any possible explosion. Joints must be of such length and fit that resulting flames, etc., cannot reach the outside atmosphere. Such joints usually employ either accurately ground faces held together by a multiplicity of bolts or a threaded joint so designed that at least five threads are holding.

The Revolvator design, wherever feasible, uses the threaded joint, which they believe provides less opportunity for human error on reassembly after servicing. Strength of enclosures is far in excess of normal safety factors.

Push Button

FILLING of orders from warehouses is quick and accurate with this system, which provides remote control for releasing and counting individual items of an order or group of orders and combining all items for future distribution.

THIS PUSH BUTTON order filling system, developed by the Mathews Conveyer Company for Gallo Sales Co. is applicable to most canned or bottled products in cardboard cartons with normal storage lines up to 100 or 130 ft long.

It consists of a bank of 66 gravity roller conveyer storage lines in a 3-deck arrangement, on which are stored cases of various commodities, one commodity to a line.

At the lower end of each line is an escapement which will allow one case at a time to flow on to a belt conveyer at right angles to the gravity conveyer. There are a total of three belt conveyers, one for each deck or layer of roller conveyers.

These three belt conveyers converge vertically and discharge on to a wide chain driven live roller conveyer, which converges the flow horizontally, so that the final result is a single conveyer line flowing to route trucks.

The whole system is controlled by an operator at a control console who makes up orders of various commodities.

This is accomplished by means of two banks of switches, one for the quantity and the other for the variety desired. By operating one bank of switches with each hand, he can quickly put an order into the control panel.

When he has completed putting the order into the panel, the operator presses an "Order Complete" button, which causes the cases to be counted out of the storage lines automatically. While this is taking place, the operator can be setting the next order into the panel.

The Mathews conveyer contains approximately 5000 ft of conveyer, and stores approximately 4000 cases.

The output depends upon the size of the order, as there is a delay period for the system to clear itself after one order is released and before the following order starts, so as not to intermix orders.

A theoretical maximum output based on one huge order would be 7200 cases per hour, which would be more than the converging system could handle. A theoretical minimum based on one case order, with the one case coming from the farthest storage line, would be one case every 15 seconds, or 240 cases per hour.

The system is operating on average orders of approximately 8 cases at a rate of approximately 1000 per hour.

Other varieties of commodities which are used in small quantities are stored in racks near the control console. When one of these is ordered, the operator puts them on the conveyer by hand. The system was designed for all commodities having a demand of less than 5 cases per day to be stored on the racks and to be manually dispatched.

The system is loaded at the upper end of the gravity storage lines by a crew of four men, who take the cases from pallet loads and put them in the proper storage conveyer.

Later the same day, the same crew makes up the orders, one of them operating the control console, and the other three stacking the orders on pallets ready for the route trucks.

Order Filling System

Operational Data

1. Orders to be filled are set up in control panel by operating count select buttons and product select buttons for each item in any order.

2. Panel button releases cases, which are counted out on a controlled sequence to prevent interference. When all cases have been released, a light indicates that the next order can be set into the panel.

3. Provision is made for correcting errors in setting up the count, and to clear individual release counts when a line is empty.

4. Capacity of system increases with the number of cases per order. Cases are released one every 1½ seconds and collecting belt must clear before the next order is released. Capacities of 1,000 to 1,500 cases per hour can be anticipated under most normal conditions.

TOP PHOTO — Entire Mathews Conveyer system is controlled by operator at control console, who makes up orders of the various commodities.

CENTER — At lower end of each line is an escapement which allows one case at a time to flow onto a belt conveyer at right angles to the gravity conveyer.

RIGHT — The three belt conveyers converge vertically and discharge onto a wide, chain-driven live conveyer.

Kings Mountain, North Carolina

Inter-Plant Dispatch System

Factory Units Integrated . . . . Automatic Operation

THIS AUTOMATIC inter-plant materials handling system in Phenix Mills, Kings Mountain, North Carolina, has wide application in any industry which dispatches many types of loads from one building to another. Unattended, the loads can be raised, transported and lowered, thus integrating factory units.

Phenix Mills of Burlington Industries, Inc., is 60 years old and consists of two buildings. Eight years ago it was purchased and changed from a silk weaving plant to a carded cotton yarn plant. It is rated as a 21,600 spindle plant with production of about 140,000 lb of finished yarn per week.

In the original plant carding was done in Building No. 2 and weaving in Building No. 1. In the plant revamping, carding was to be done on the lower floor of Building No. 2 and spinning on the upper floor of Building No. 1. This would have necessitated pushing the boxes containing roving by hand 35 ft between buildings and then by elevator to the second floor. Before attempting this, monorail material handling engineers were consulted and a Louden Machinery Company Automatic Dispatch System installed.

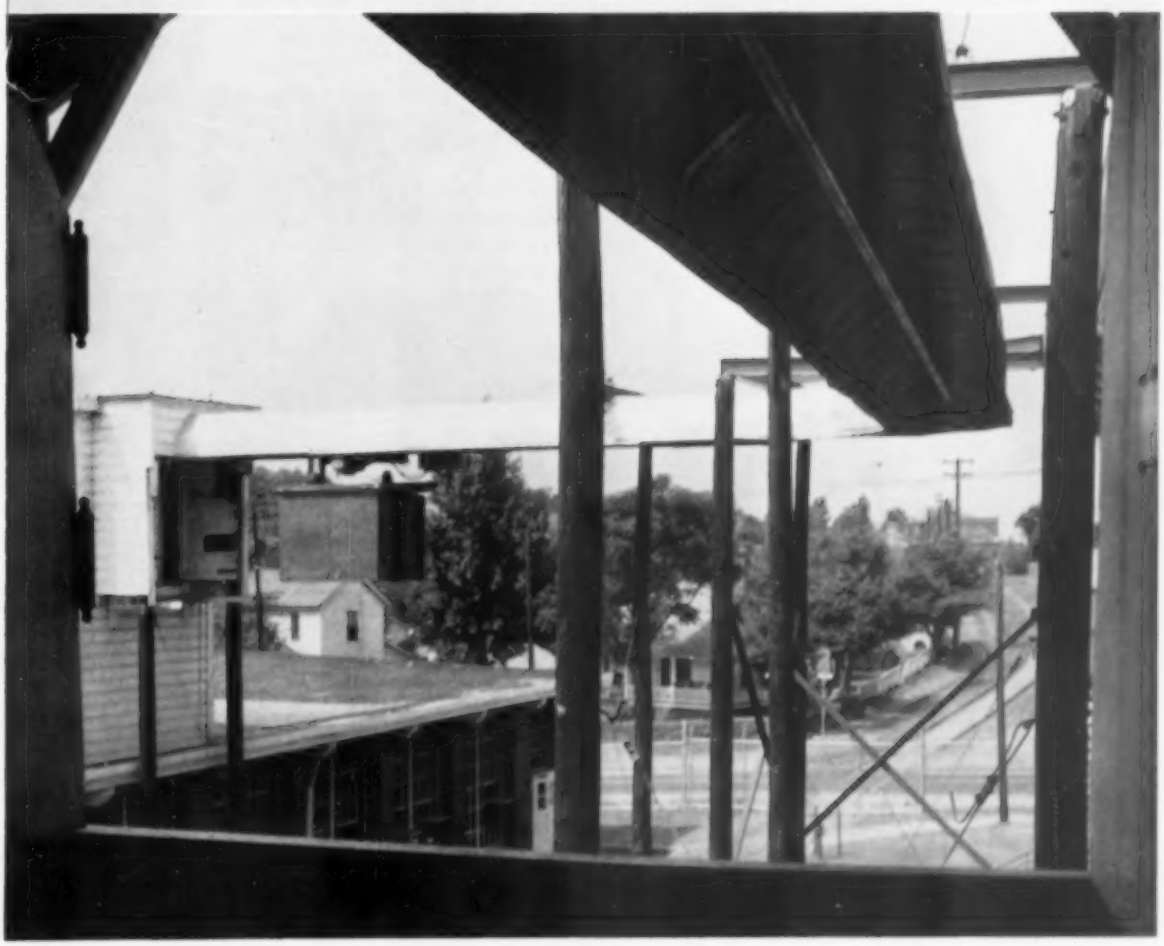
Today 125 ft of track has been erected between the buildings, carrying a 6' x 6' x 4' metal car. The conveyor car is loaded at ground level in Building No. 2 and is lifted 35 ft by a Louden 220 volt gear head motor. After reaching track height (35 ft) the car automatically travels the 125 ft to Building No. 1. Car is unloaded manually at the end of the track, and at the press of a button returns to the ground floor in Building No. 2.

The car averages 40 to 60 trips per day. The plant is working 3 shifts per day, 5 days per week. One man per shift operates the system. A one-way trip consumes 45 seconds. Other than general maintenance, the system requires no special attention.

LEFT—Operator loads two trucks of roving on the car. When loaded car is ready to leave the floor a safety chain is put in place and a warning horn sounded.

OPPOSITE PAGE — Top photo shows the car leaving Building No. 2. In the lower photo loaded car is about to enter the receiving deck at the end of the line.

Data reported by The Louden Machinery Company, based on an interview with I. W. Ledford, master mechanic, Phenix Mills, Burlington Industries, Inc., Kings Mountain, North Carolina.



Three Mile

Cartons of shoes flow uninterrupted over Alvey conveyors on their way to loading docks.

A LITTLE MORE than a year ago two groups of engineers — one from one of the largest shoe companies in the world, and the other from a leading manufacturer of conveyor systems — sat down in a huddle with this objective: to plan the details of a modern materials handling system for the shoe company's new, ultra-modern $2,000,000 shoe distribution warehouse in St. Louis.

The two companies were Brown Shoe Company and Alvey Conveyor Manufacturing Company. The final result of that initial meeting is a three-mile system of conveyors that is so completely integrated, so well-coordinated, that Brown can now receive the daily output of 17 factories, store two and one-half million pairs of shoes, and ship 60,000 pairs each day.

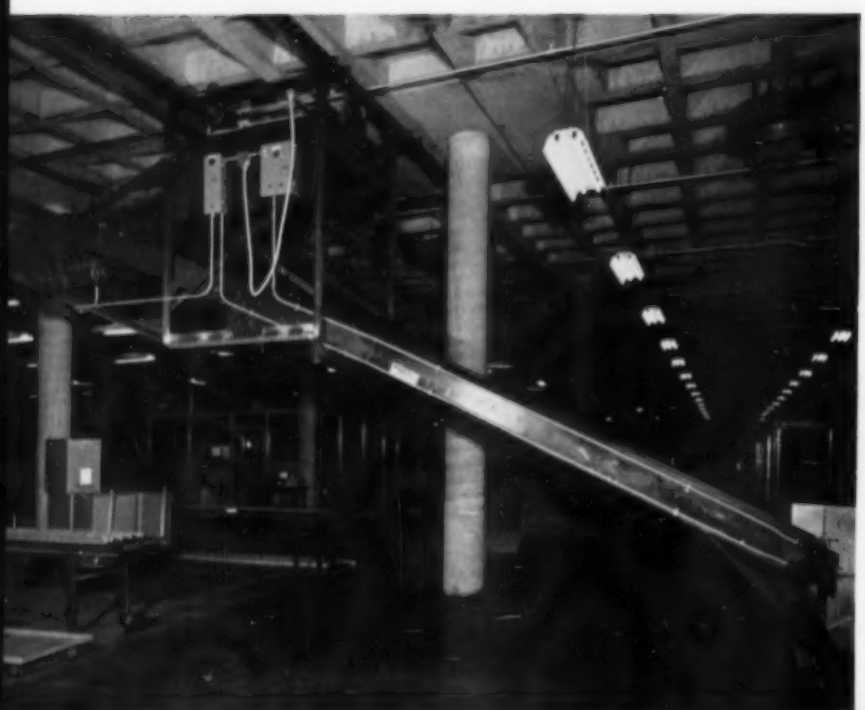
It would be incorrect to describe the effort on this conveyor system as "all in a day's work." For, before it was completed, it involved thorough planning and detailed engineering — with close cooperation between Alvey Conveyor and Brown Shoe engineers.

Three stories high and approximately 500 ft by 300 ft, the warehouse contains 465,000 sq ft of floor space, which combines the services previously handled in three nine-story buildings.

In fact, Brown is believed to be the first multi-factory shoe company in the nation to have such an integrated handling system. It enables them to service men's and women's brands from factories in Missouri, Illinois, Indiana, Arkansas, and Tennessee.

Simultaneously, the warehouse can handle the unloading of stock from 30 trailer trucks, which arrive daily with the output of all 17 factories served by the St. Louis distribution facility. At the same time, the warehouse can accommodate incoming shoe shipments from nine railroad cars.

Considering this highly efficient operation of receiving, storing and shipping, it is no wonder Brown executives insisted on an equally efficient and modern method of



Booster belt, leading from unloading dock, at right, can be shifted to reach the proper track in the Alvey overhead conveyor system.

Conveyor System

Ultra-Modern Warehouse in St. Louis, Missouri

Three miles of conveyors provide an ultra-modern materials handling system for Brown Shoe Company's 10-acre, $2 million distribution warehouse.

in-plant materials handling that would help them coordinate and synchronize incoming and outgoing shipments. That is why they needed a pushbutton-control, automatic conveyor system.

Minimum of Manhandling

Today, there is a three-mile system of overhead and lower level conveyors, permitting maximum use of valuable floor space, high speed flow of stock, with a minimum of manhandling.

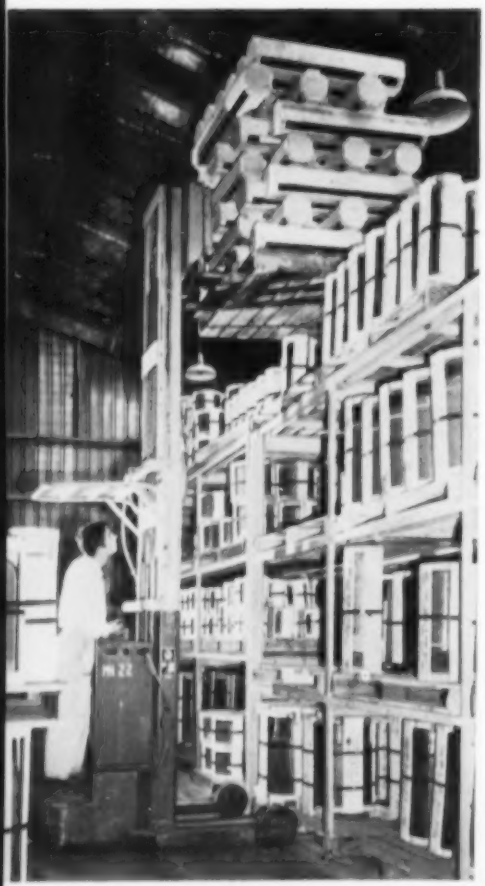
The continuous flow of incoming stock is handled by overhead conveyors, while outgoing shoe traffic is carried by lower conveyors. The overhead system also transports stock from one end of a floor to the other and from one floor level to the next.

A special, and profitable, feature of the system is the two-fold use of overhead conveyors — for smooth traffic flow by day, and for convenient storage by night.

With no congestion at any time, incoming stock from the fleet of 30 road trailers can be unloaded at one time and stored on the overhead conveyors; so that the entire daily shoe production of 17 Brown Shoe factories can be held on the conveyors overnight. There's enough storage space right on the conveyors so that they need not be touched until the next morning. Then the shoes are waiting to be placed in stock, or to fill orders when the warehouse crew arrives.

Outgoing cases of shoes are transported along lower level conveyor tracks on the first floor of the warehouse. Here, a dispatcher operates a 28-button, Alvey-engineered control panel. By a single press of one button, the operator can shunt cases down any one of 74 tracks to the proper carrier.

A press of a button sets in motion a conveyor system that helps Brown Shoe Company ship up to 60,000 pairs of shoes per day.



Duncan, Oklahoma . . .

More Warehouse Space With Narrow Aisle Tiering Truck

WAREHOUSE space utilization is a major problem for many industrial plants, large or small. Halliburton Oil Well Cementing Co., Duncan, Oklahoma, recently outgrew one section of its warehouse. The 60 x 200 ft section had become a liability, because it apparently was no longer suitable for its intended purpose.

However, through the utilization of a narrow-aisle tiering truck, this section was converted from a liability to an asset.

Halliburton placed its Model "M" truck (Lewis-Shepard Products, Inc.) in operation and gained 1400 sq ft of additional warehouse space. The new electric truck was able to operate in 7 ft aisles. Previously, using a gasoline-powered truck, 12 ft aisles were required.

Morris Dulaney, Halliburton's materials handling superintendent, describes how the L-S electric truck is used: "All materials in the section of the warehouse where the electric truck is used are palletized. The truck picks up the material and deposits it in racks in this section of the warehouse. When material is to be shipped, the truck picks it from the rack and moves it to the shipping section."

Standard pallets used in the warehouse are 42 by 52 in. Loads weighing up to 2,000 lb are handled by the truck, which is used during the full 48-hour work week.

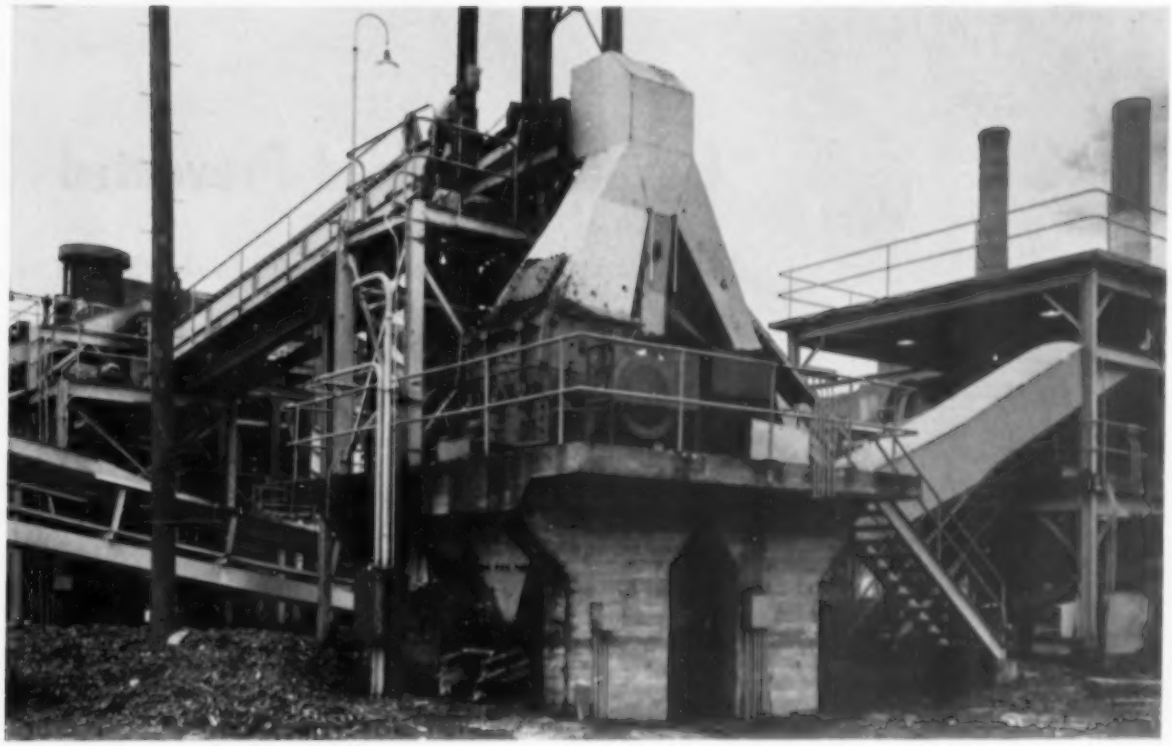
The truck, which is operated from a standing position while riding it, is equipped with a hydrafork. Two distinct advantages over standard straddle-type trucks are offered by this hydrafork-equipped truck:

1. Large 10-in. diameter rubber tired load wheels that make for better floor protection.
2. Pallets of any width can be handled with complete flexibility.

To pick up a load off the floor the truck is run up to the load. Forks are then hydraulically extended into the pallet and the load is lifted up over the load wheels. After the forks and load are retracted into the truck, the truck is ready to travel to the storage area.

When it arrives at the proper storage rack, the truck is positioned so that it faces the rack. The forks are extended until the load is in the proper position in the rack, and next the load is dropped and forks are retracted from the pallet.

TOP PHOTO shows how detiering two pallets looks from the ground floor. Narrow-aisle operation is illustrated in PHOTO AT LEFT as operator takes palletized load from atop storage rack. Only 32 in. wide at the rear, the L-S narrow-aisle truck will actually operate in aisles as little as 6 ft wide with 40 in. long pallets. Halliburton's use of a slightly larger pallet, necessitates the 7 ft aisles.



BARK HOG

Production Increase Through Modern Materials Handling

THE GROWTH of the pulp and paper industry, coupled with new uses for what were formerly waste products, has stimulated materials handling manufacturers to develop units which will perform a wider variety of functions. Such a demand was recently encountered at a large southern paper mill.

The problem, fundamentally, was one of reducing the bark from the raw logs so that it could be more completely utilized. At this plant, the rough pulp (logs with the bark on them) are first debarked in huge drum barkers. This represents the initial, and usual, step in the system.

From the drum barkers, a conveyor picks up the bark and transfers it to a 42 x 66 Jeffrey Manufacturing Co. Primary Bark Hog. This particular unit is a No. 4226 equipped with heavy slab steel frames with manganese steel liners. Anti-friction bearings are lubricated by an oil circulating and cooling system—direct connected to a 250 hp motor by a Sier-Bath coupling.

Large tonnages are fed to this Primary Bark Hog which is capable of shredding the bark so that about 50% is fine enough to be immediately suitable for burning.

From the primary shredder the material is conveyed on a Jeffrey conveyor to separating screens. In this phase of the operation the finely shredded material (approximately one-half) is screened out and conveyed to fuel storage. The remaining over-size is conveyed to a Jeffrey Secondary Bark Hog.

This Secondary Bark Hog is a No. 4326 Jeffrey, equipped to make a very fine product when fed the over-size from the Primary Bark Hog. It is direct connected by a Jeffrey pin and belt type flexible coupling to a 150 hp motor.

Following this secondary shredding, the desired fuel size is transferred, by conveyor, to fuel storage and the very small percent of remaining over-size is re-cycled again through the Secondary Bark Hog.

The final phase of the bark processing operation is the burning. This step is accomplished by a Babcock - Wilcox Cyclone boiler. These boilers have been used with great success in the past for burning fine coal. This particular installation is one of the first where these units have been applied to bark burning. Because they require a somewhat finer feed, they offer an excellent testimony of the effectiveness of the Jeffrey Primary Bark Hog which is capable of sending about half of its primary shreddings directly to the Cyclone.

Courtesy, R. W. Stevenson, Crusher Division, the Jeffrey Maufacturing Co.

Elevator Overload Prevented

Signals Warn Operator Before Trouble Starts

QUINTON STRICKLAND

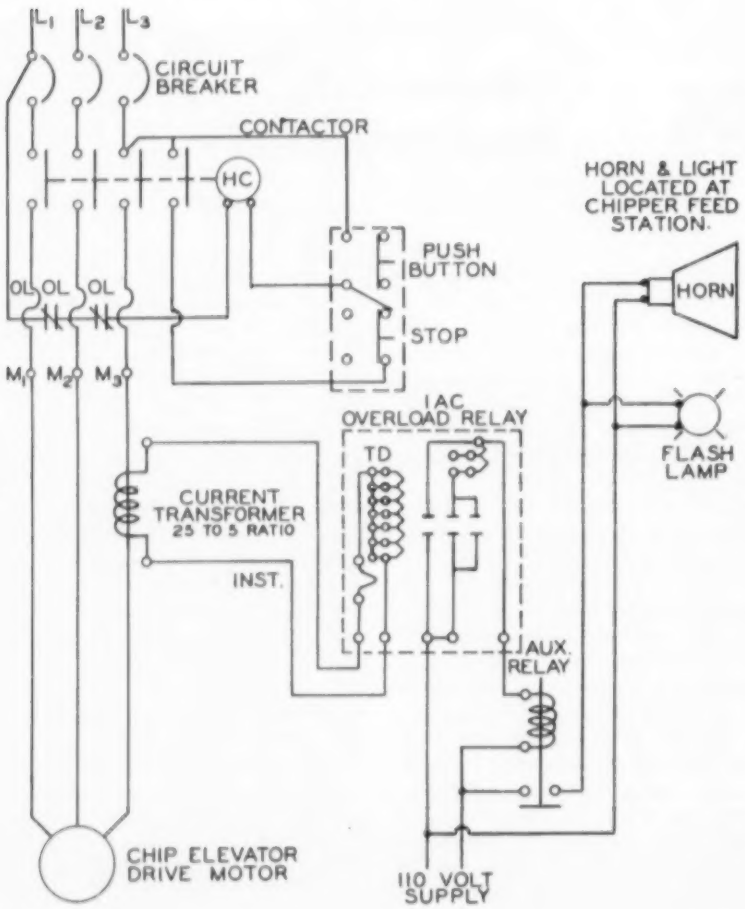
HERE AT BRUNSWICK Pulp and Paper Company, we have a chip elevator which elevates the chips from ground level to a height of approximately 60 feet, dumping onto a belt conveyor which transports the chips to the chip storage bins.

The rate of chipping can far exceed the capacity of the chip elevator if the feed to the chippers is not regulated. This was happening quite often, as much as three times per day, causing a one hour loss each time the elevator motor tripped out. At a cost of $125.00 per hour the expense was running from $125.00 to $375.00 per day.

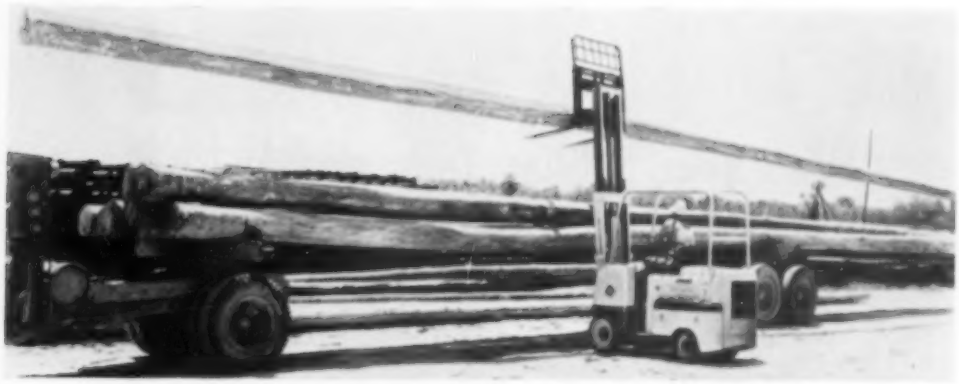
The men that feed the chipper had no way of determining what the loading was on the elevator motor until it had tripped out.

Quinton Strickland, our day electrician, in the Wood Preparation Area, suggested that a signal be provided to warn the chip feeders when overload was approaching the trip-out point. He then proceeded to work out and install the warning signals as shown on the enclosed diagram.

Using material on hand, most of it second hand, he installed a 25 to 5 current transformer in one of the motor leads, an old 1AC overcurrent relay, an auxiliary relay, a horn and a lamp socket, and wired the system as shown in the accompanying diagram. It took him a little while to get the 1AC overcurrent relay adjusted, so as to properly warn the chipper feeder, but since the proper adjustment has been attained the troubles from the elevator kicking out have been eliminated.



By N. H. MAILHOS
Superintendent of Power
Brunswick Pulp & Paper Company
Brunswick, Georgia



Big Job for Fork Truck

Freeport Sulphur Company, Louisiana, Solves Handling and Storage Problem

THE ADVANTAGES of modern equipment and efficient methods are being demonstrated daily by a fork lift truck at Freeport Sulphur Company, Harvey, Louisiana. The modern unit handles a tremendous amount of work and has cut handling time in half.

The truck works eight hours a day transporting loading and unloading a variety of products. The plant at Harvey is the storage warehouse terminal of the other company plants at Port Sulphur, Garden Island Bay, Chacahoula, Bay St. Elaine, and Grande Ecaille.

The Allis-Chalmers fork truck is used to load and to unload these vessels as they arrive and depart from the main Louisiana Plant. In addition, the truck transports the materials to and from the plant's various storage areas. The truck is also used for boxcar unloading at a siding at the plant.

An LCT shipment varies from 75 to 150 tons and a typical barge shipment weighs from 250 to 350 tons. Comprised of a number of different kinds of material—pipe, lumber, fittings, chemicals, cement —these shipments are being loaded by the truck in record time. For example, it takes only two hours to load an LCT with 100 tons of pipe, and only four hours to load an average shipment on board the barge. This is 50% less time than was required before when using two trucks.

By using pallets and pallet racks in conjunction with the truck, Freeport Sulphur reports that taking inventory has been much improved and actual usable storage space has been increased by 35%.

The ramp loading problem of Freeport Sulphur Company is being effectively solved with the Allis-Chalmers fork lift truck. Equipped with a torque converter this truck easily maneuvers the 30-foot, steeply-pitched ramp under load without slipping or skidding. The torque converter insures smooth power flow and decreases maintenance.

Jacksonville, Florida . . .

Wire Rope Splicing Technique

Portability . . speed . . low cost

PORTABLE wire rope splicers — Torquemaster units manufactured by Quay Industries of Jacksonville, Florida — are being effectively used by many industries. Applications illustrated are from the Geo. D. Auchter Co., contractors and engineers of Jacksonville, and the Gibbs Corporation Shipyard.

Splicer design features portability, speed, and low cost per splice. Operation is quite simplified. Clamping jaws and thimble block are adjusted so that the block backs up the wire rope against the head of the thimble. Jaws are rotated counter to the lay of the cable sufficiently to remove the initial tension in the standing part of the cable. Brake should be tightened enough to prevent counter-rotation but to still permit jaws to be rotated against the lay of the cable by manual pressure.

Once the initial tension on the standing part of the cable has been removed, the strands in the bitter end may then be quickly run through. With a slight rotation counter to the lay of the cable, each strand is then brought on top and run through without the operator having to look underneath the cable. The loose ends of the strand are then tightened by normal hand pressure or with a wire tightener.

RIGHT — Oscar Jay, master rigger for the Gibbs Corporation, is removing a ½" choker sling from the splicer. Quay Torquemaster is in a vertical mount.

BELOW—E. E. Forbes, mechanic for the Geo. D. Auchter Co., is making a ¾" eye splice with the splicer in a parallel mount.

74 MATERIALS HANDLING Ideas & Methods

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44 Catalogs & Bulletins – Pages 78-83

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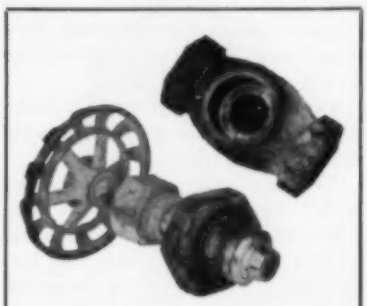
"I got 5 years of service from a valve I expected to last only 90 days"

Mr. C. L. Worthington, Chief Engineer for E. L. Bruce Co., Little Rock, Arkansas plant, standing near a Walworth No. 225P Bronze Globe Valve with "500 Brinell" stainless steel seats and discs that was installed in severe boiler blowdown service. Hardened seats and discs are especially resistant to wire drawing, steam cutting, or galling.

Some time ago Mr. C. L. Worthington, Chief Engineer for E. L. Bruce Co. plant at Little Rock, Arkansas, was having valve trouble on some newly installed boilers. The first boiler to go in service generated 600 hp operating at 200-pounds pressure. The water was so bad that a hot lime and soda ash water softener treatment had to be used, and it was necessary to add other chemicals to this solution from time to time. Mr. Worthington wanted to use a continuous blowdown to skim off the worst part of the scum on the water. He installed a small blow pipe about an inch below the normal water level in the boiler. This worked well, except that the one-inch valve on the line could only be partially opened and let a small part of the scum be blown off at one time. If the valve was widely opened, it would not take long to lower the water level in the boiler and run the steam pressure down. This service gave Mr. Worthington lots of valve trouble, as can well be imagined, because of the extreme wire drawing that occurred.



A Walworth No. 225P Bronze Globe Valve that gave perfect performance for four years and 362 days in a severe boiler blowdown service where the Chief Engineer said he had never been able to keep a valve more than 60 to 90 days.

One day the Walworth representatives in that area, called upon Mr. Worthington and demonstrated the outstanding features of the Walworth No. 225P Bronze Globe Valve. This valve, which has a working steam pressure rating of 350-pounds at 550°F, has a plug-type stainless seat and disc which has been heat treated to a minimum hardness of 500 Brinell. After listening to the Walworth men and examining a 225P valve, Mr. Worthington agreed that he would try one in the severe service described. He said if it lasted 90 days, he would consider that it had done a good job.

The valve went into service and came out within three days of being in service five years under very severe operating conditions. The valve was used 24 hours a day from early in the morning on Monday until Saturday night, when it was closed until the following Monday morning. It was never opened more than three-quarters of a turn, and most of the time it was opened only one-half to one-quarter of a turn. For the life of the valve, nearly five years, it never failed to give a 100% closure when shut on Saturday night until opened Monday morning.

When another 600 hp 200-pound pressure boiler went into service, it also was equipped with a one-inch Walworth No. 225P Bronze Globe Valve on the same service.

In view of the severe service and the wire drawing to which this valve was subjected, it is interesting to note that the original valve (which was taken out of service almost five years after it had been installed) was removed – not because the seat and disc were wire drawn – but because the turbulence of the steam had finally caused a small hole to occur in the wall of the body of the valve. Needless to say, the valve that was taken out of service was replaced immediately by another one-inch Walworth No. 225P Bronze Globe Valve, positive assurance that Mr. Worthington is satisfied that this valve has "done a good job."

Other Walworth products include complete lines of Gate, Globe, Angle, Check and Lubricated Plug Valves in bronze, iron, steel, stainless steel and special alloys. Complete information and literature will be furnished upon request.

WALWORTH

60 East 42nd Street, New York 17, New York

SUBSIDIARIES: ALOYCO ALLOY STEEL PRODUCTS CO. CONOFLOW CORPORATION M&H M & H VALVE & FITTINGS CO. SW SOUTHWEST FABRICATING & WELDING CO., INC. WALWORTH COMPANY OF CANADA, LTD.

Manager of Lockheed Aircraft Georgia Division Tells Industrial Workers

How to Get Promoted

CAN YOU

Delegate Work?
Accept Changes?
Learn Why?

By CARL KOTCHIAN*

PROPER delegation of work to his associates is the most effective way for the boss to gain promotion for himself.

Only by such delegation does a man train his associates so that he himself is available for promotion to another job when the opportunity presents itself.

A man who worries about his own job to the point he is afraid to give recognition to the accomplishments of those who work for him will probably never be promoted himself. His bosses will never know there is a man capable of taking his place on his present job.

A supervisor should point out the good qualities of his associates so his boss will know replacements are available and will consider that he is available for promotion.

Job rotation is a good means of developing men for higher jobs and it can also improve efficiency of job performance.

Too often a man is left on a job so long he begins to think he knows more about this job than anyone else. Perhaps he does—but if he becomes headstrong and ceases to be a part of the team he cannot show his best capabilities.

Under a carefully supervised program of job rotation, the man put into a new job starts off on a platform from which the inherent spirit of competition urges him to do a better job than did the man he succeeded. The same spirit of competition affects the other man in his new job. The result is: Both jobs are done better.

A job rotation plan, performed with any reasonable degree of caution and not done indiscriminately, will improve job performance and individual development in 95% of the cases.

The mortality rate in rotation is low. Only in 5% of the cases will a man be misplaced in his new assignment and some subsequent adjustments have to be made.

One of the greatest satisfactions for any good supervisor is the development and broadening of his employees—the pleasure of seeing their progress through the years as individuals and as part of the team.

Delegation of operations to teams decentralizes obligations and trains more men.

One of the best examples of thousands of people working together to get tough jobs done is what has happened at Lockheed's Georgia Division at Marietta since that plant was opened a little more than six years ago.

Only a few more than 200 experienced aircraft people came to Georgia from California to begin operations of the Marietta aircraft plant. Some 18,000 Georgians are now on our team, building propjet transports and doing highly-skilled work on six-jet bombers for the Air Force. They make a great example of what people can do.

Workers are interested in knowing more than the *what*, *where*, *when* and *how* of their jobs. They want to know the *why*.

Training our workers HOW to build jet airplanes was not enough. To get really enthusiastic teamwork, it is necessary to tell a person why he is doing a certain job.

Good communications are essential in an organization to keep people informed about their jobs. They must have that knowledge to get their jobs done.

People are important in doing any job. The so-called electronic brains, can't replace people.

These million dollar machines aren't worth a cent without individuals to think out procedures and to tell them what to do. The fact is that all our new, complicated machines only make man more important, more skilled, more powerful. They are just tools which man has invented and which he uses. The most important thing is for man to make sure he uses them to his advantage—for the benefit of man—and not for destruction.

*Abstracted from comments of CARL KOTCHIAN, vice president of the Lockheed Aircraft Corporation and general manager of the Georgia Division at the eleventh annual Atlanta Personnel Conference at the Georgia State College of Business Administration.

it's **boiler check-up** time!

HOW ARE YOUR BLOW-OFF VALVES?

Are they drop-tight? Rugged and dependable? Easy to maintain?

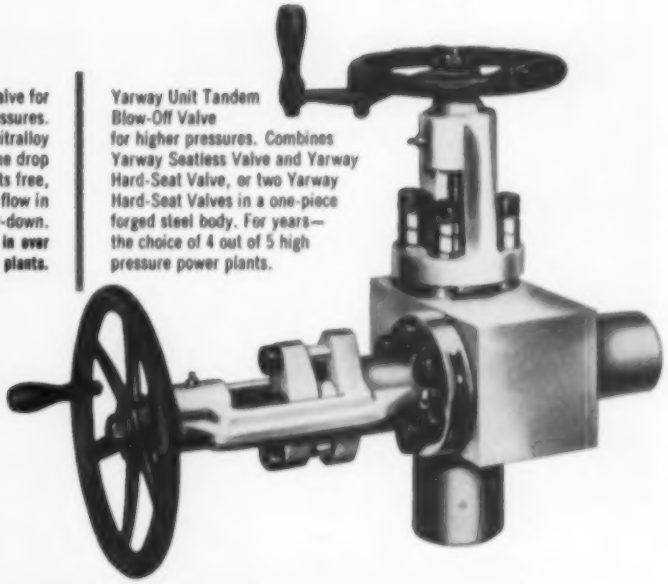
Just as important, do they have all the advantages and up-to-date improvements in materials and design of new YARWAY Blow-Off Valves?

Old YARWAY Blow-Off Valves also can be overhauled and modernized, because all YARWAY improvements are *interchangeable* with parts on earlier models.

Write today for free YARWAY Blow-Off Valve CHECK SHEET—also new YARWAY Blow-Off Valve Catalog B-426 (pressures to 400 psi) or B-434 (pressures to 2500 psi).

YARNALL-WARING COMPANY
Home Office:
116 Mermaid Avenue, Philadelphia 18, Pa.
Southern Representative:
ROGER A. MARTIN, Bona Allen Building, Atlanta 3, Ga.

Yarway Seatless valve for low and medium pressures. Features balanced nitralloy plunger that seals line drop tight—yet permits free, unobstructed flow in blow-down. **Used in over 15,000 boiler plants.**



Yarway Unit Tandem Blow-Off Valve for higher pressures. Combines Yarway Seatless Valve and Yarway Hard-Seat Valve, or two Yarway Hard-Seat Valves in a one-piece forged steel body. For years—the choice of 4 out of 5 high pressure power plants.

YARWAY blow-off valves

Union Electric of Missouri – Newest Unit 250,000 kw, 2,000 psig, 1,000 F.

Soot Blowers at Meramec

ALTHOUGH present practice at the Meramec Station of the Union Electric Company of Missouri is to use compressed air for soot blowing on boilers 1 and 2, the Unit No. 3 will use cold reheat steam because evaluation studies proved it to be more economical.

Unit 3 will be a Foster Wheeler dual-circulation boiler, the first of its kind to be equipped with water-cooled burner throats. It will be designed with steam-cooled walls. Steaming capacity is 1,850,000 lb/hr at 2150 psig and 1010 F temperature, with reheat to 1010 F. The unit will be equipped with a total of 54 blowers divided into 32 wall deslaggers, 16 retractable units in the convection zone, 4 rotaries in the economizer and 2 swinging-arm type in the air heaters.

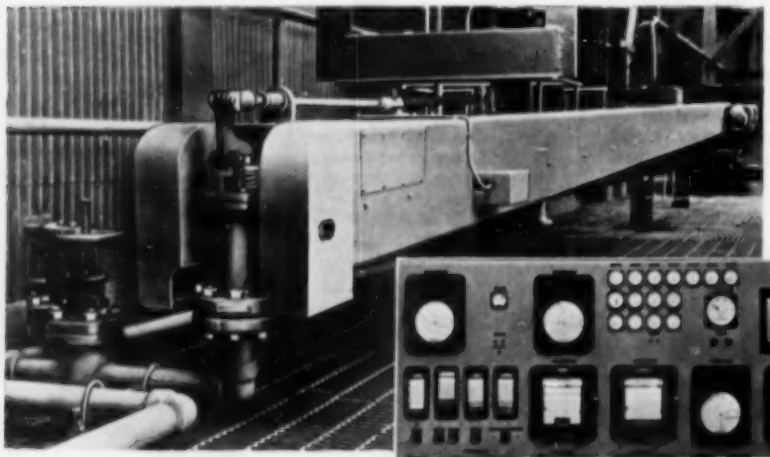
The new turbine-generator will have a nameplate rating of 250,000 kw and maximum capability of 287,500 kw using steam at 2000 psig and 1000 F. Meramec is constructed on the basis of one boiler, one turbine-generator and one set of auxiliaries per unit. There are no interconnections between the heat cycles, and it was the first plant in its area to use centralized control for each boiler-generator unit.

The present turbine-generators have nameplate ratings of 110,000 kw and maximum capabilities of 140,000 kw. The regenerative-reheat cycle is employed with both boilers, each of which is rated at 925,000 lb/hr at 1400 psig and 950 F. Fuel is pulverized coal with provisions for gas firing and warm-up. Burners are arranged for tangential firing, and can be tilted for superheat control.

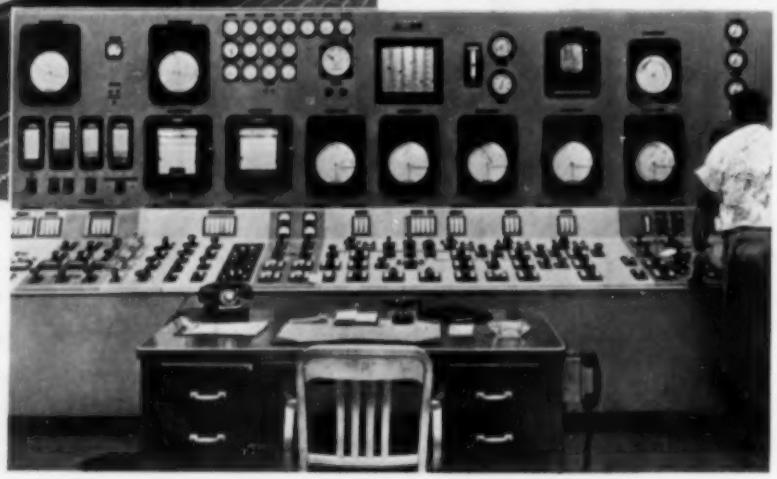
Reaching 38 ft into a boiler tube bank to blow soot is the record distance covered by a retractable soot blower installed on No. 1 boiler. This is the first blower built for this travel. It was substituted for two opposed blowers (each of which traveled one-half the width of the furnace) to reduce the number of units necessary for cleaning the deep tube bank. The Vulcan T-30 blower was built by Copes-Vulcan Division, Blaw-Knox Company.

Even though it is located in the hottest possible spot for a retractable soot blower, the furnace exit where the temperature averags 1910 F, performance of this unit led to the selection of T-30 blowers with 30 ft travel, RW-3E wall deslaggers and rotaries for Meramec's new Unit No. 3.

The overhung weight of the long lance is supported by an exceptionally rugged framework, which requires only one outboard hanger. Lance travel and rotation are nonsynchronized through two driving motors to produce a double multihelix cleaning path so that insertion and retraction covers different areas of the tube bank. The two-motor drive also assures against lance damage if one motor should fail during the blowing operation.



Replacing two opposed blowers, this unit propels its air lance 38 ft through the tube bank.



One of the first utility stations in its area to use centralized control for each boiler-generator unit, Meramec groups the electrical and boiler controls.

from track hopper
to silos to bunkers...
from ash pit to the dump,

JEFFREY mechanizes every move!

For many years, Jeffrey coal and ash handling equipment has been safeguarding service in many of the country's power plants. And showing a remarkably low cost-per-ton of coal handled. Jeffrey makes equipment for every type and size of plant.

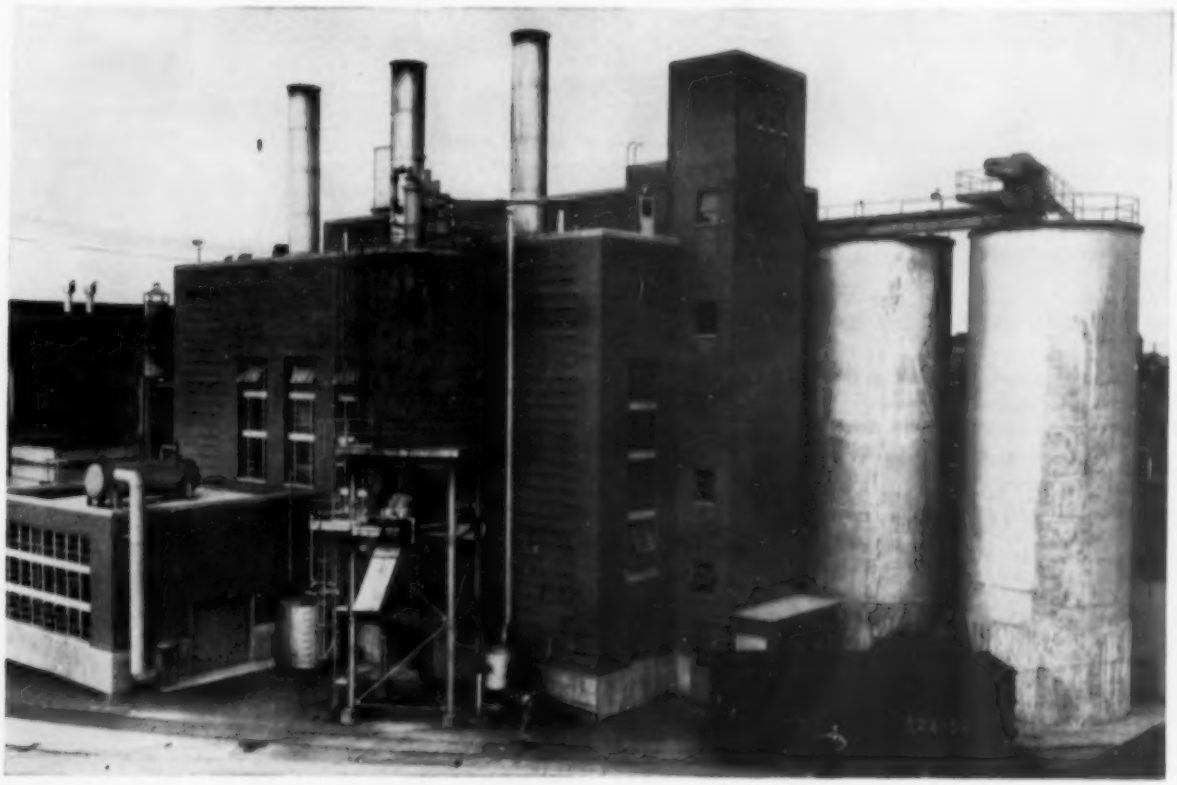
TRACK HOPPERS—in many shapes and sizes; 5 tons to 30.

FEEDERS—spiral, plate, electric vibrating and apron feeders; a type to meet any local condition.

CRUSHERS—reduce lump coal to uniform sizes in a single operation, assuring maximum stoker efficiency.

BUCKET ELEVATORS—for elevating and distributing coal; in various heights and in capacities of 25 tons to 40 tons per hour. Also V-bucket elevator-conveyors and pivoted bucket carriers. Scraper and drag chain conveyors for inclined and horizontal runs.

SPIRAL CONVEYORS—ideal for use in limited space and where demands are moderate. Coal can be discharged at any point through valves in trough bottom. Available in various lengths.



Jeffrey engineers will assist you in selecting the most efficient and economical Jeffrey coal and ash handling equipment to meet your requirements. Literature is available on each of these product groups. The Jeffrey Manufacturing Company, Columbus 16, Ohio.

JEFFREY

CONVEYING • PROCESSING • MINING EQUIPMENT • TRANSMISSION MACHINERY • CONTRACT MANUFACTURING

For more information, use Reply Card—Page 73

North Carolina Engineer Tells How to See

GOOD LIGHTING

a Tool for Production

PART I — Size.. Brightness.. Contrast.. Time

By ROY A. PALMER
Duke Power Company
Charlotte, North Carolina

LIGHTING plays a multiple role in industry. In today's high costs it can actually become the balance point between profit or loss. Good seeing conditions can contribute to improvement in production and a decrease of "seconds." The safety record can be marred or improved by the lighting condition. The visual environment and pleasing atmosphere provided by good lighting as contrasted to dark, gloomy surroundings can have a marked effect on employee morale and turnover.

Recognizing the many values to which good lighting can contribute in any industrial operation, it becomes obvious that management must give serious consideration to the lighting conditions in all parts of the plant. Conversely, to overlook or neglect lighting means that employee attitude, efficiency and welfare as well as production costs and results must suffer.

From these facts, it is evident that the lighting system and its maintenance is on a par with efficient, labor-saving machines. Good lighting indeed, is a tool for production.

The visual tasks in a plant cover a wide range. Many tasks require speed of seeing while others demand minute accuracy, or there may be a combination of both speed and accuracy. Color also may be an important factor in discrimination or matching.

It is of particular interest to note that subnormal eyes benefit much more in percentage gain than normal eyes as illumination is improved. The eyes, like other bodily elements degenerate with age. As one becomes older, the size of the pupil decreases so that a higher brightness of the object is necessary to permit more light to enter the eye as compared to that necessary for younger, larger pupils.

Likewise, accommodation — the ability of the lens of the eye to adjust to focus at different distances, is improved as illumination is increased. As we grow older, accommodation is slower and more difficult. However, subnormal accommodation increases by a greater percentage than does normal accommodation when illumination is increased. Thus the ability of the eye to see easily, quickly and safely is greatly enhanced by good lighting.

The visibility of a task or object is determined by its size, brightness, contrast to background, and time of viewing.

New developments and practices are continually improving industrial lighting. This is the first article of a series that will open your eyes.

Size and Visibility

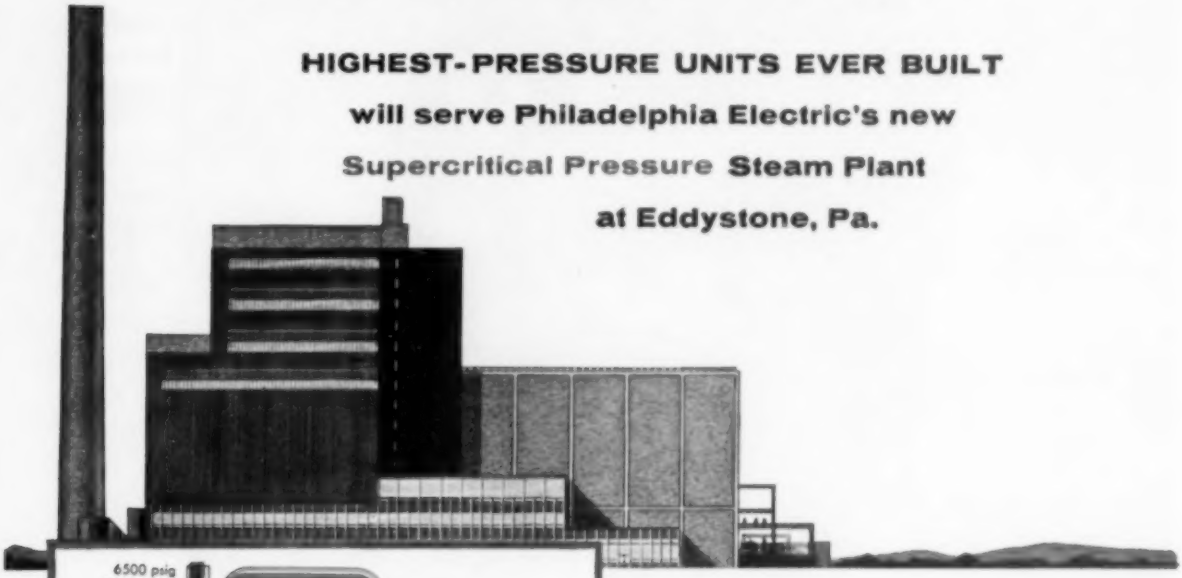
Large type is easier to see than small type. This perhaps accounts in part, for our hesitancy to thoroughly read our insurance policies. Very small objects demand a magnifying glass or even a microscope.

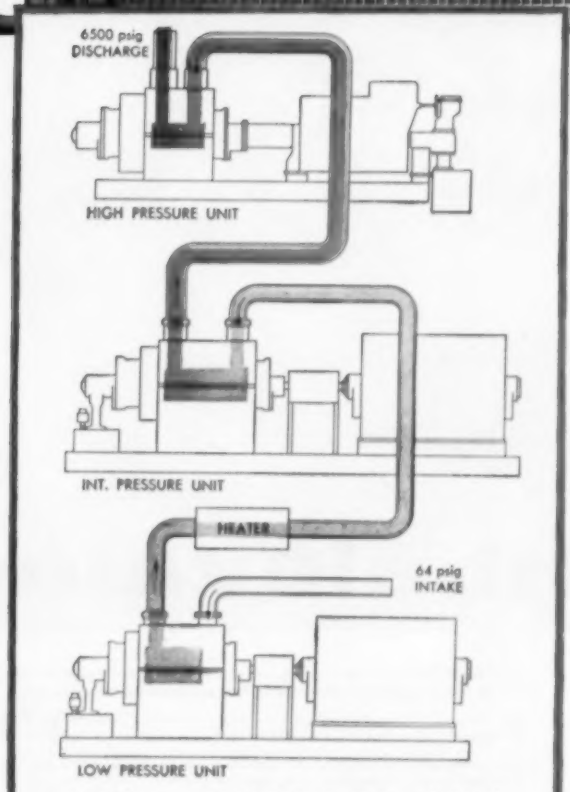
The fact that increased illumination assists our eyes to see small objects easier is proved by our instinctive urge to move closer to an area having greater illumination when attempting to discern small detail. When viewing the inside of a watch, for example, we move toward a window or a lamp

(*Continued on Page* 66)

6500 psig
BOILER-FEED PUMPS

HIGHEST-PRESSURE UNITS EVER BUILT
will serve Philadelphia Electric's new
Supercritical Pressure Steam Plant
at Eddystone, Pa.





Feed water at approximately 6500 psig will be provided by six CHTA pumps, operating as two half-capacity pumping units. Each pumping unit will consist of 3 pumps in series as shown above.

SCHEDULED to go on the line in 1959, Philadelphia Electric Company's 325,000 kw Eddystone Station will operate at a higher steam temperature and pressure than any installation thus far announced. Using supercritical pressure and two reheat stages, it will require less fuel per kw-hr than the most efficient power station now in operation.

The steam generator will be served by six Ingersoll-Rand double-case pumps. To provide the required pressure and capacity they will be arranged as two half-capacity pumping units each consisting of three pumps in series. The suction pressure will be 64 psig and the discharge approximately 6500 psig. The final discharge temperature is 575°F. Featuring Ingersoll-Rand's proven *Unit-Type Rotor Assembly*, these pumps will be the highest-pressure boiler feeders ever built. Special stuffing box designs will be used to control leakage at this supercritical pressure.

The selection of I-R pumps for this historic installation reflects the confidence of Philadelphia Electric Company in Ingersoll-Rand's ability to design and build equipment for pressures and temperatures never before encountered in boiler-feed service.

Whatever your boiler-feed requirements, they can be met to advantage with Ingersoll-Rand centrifugal pumps of proved dependability and economy.

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COMPRESSORS • AIR TOOLS • ROCK DRILLS • TURBO BLOWERS • CONDENSERS • CENTRIFUGAL PUMPS • DIESEL AND GAS ENGINES

Otis freight elevator

"ENGINEERED SERVICE BY THE MAKER"

Only Otis Maintenance offers these advantages to owners of Otis Freight Elevators

- "Engineered Service" by the maker maintains the original efficiency of the installation and assures peak performance at all times.
- Services of factory-and-field trained men with a knowledge of elevatoring that can't be matched.
- Availability of original or improved replacement parts for every installation, regardless of its age.
- Freedom from unexpected, expensive repair bills. There's just one fixed monthly charge. It can be budgeted. It's adjusted annually, up or down, on labor and material costs only. Never because of the age or condition of the equipment.

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How Johnson & Johnson babies 18 freight and passenger elevators

FERD DENHARD
Buildings and Grounds Superintendent
JOHNSON & JOHNSON

"We're tremendously interested in the safe operation and efficient performance of 16 OTIS Freight Elevators and 2 OTIS Passenger Elevators in our New Jersey plants," says FERD DENHARD, Buildings and Grounds Superintendent of JOHNSON & JOHNSON. "That's why they're 100% under OTIS Maintenance specialists.

"And it's easy to understand why. For one thing, OTIS Maintenance gives us the guarantee of the maker's high standards of safety through the constant checking and replacing of parts in advance of their breakdown point. Further, original OTIS parts, or improved replacement parts, are always available regardless of the age of the equipment. This is important to us because our installation dates extend back to 1912.

"We also feel that the successful maintenance of the original efficiency of an elevator installation depends upon the proper replacement and testing of worn parts in order to assure peak performance at all times. This again is a service best supplied by the maker of the equipment because of its importance in extending the life of the equipment indefinitely."

maintenance that keeps freight elevators running like new

- **Guarantee of the maker's high standards of safety through the constant checking and replacing of parts in advance of their breakdown point.**
- **Elimination of all guesswork in testing and repairing by using specially designed tools and electronic equipment to minimize shutdowns.**
- **Systematic upkeep and replacement of parts extend the life of an installation indefinitely.**
- **The value of a maker's pride. A perfectly performing Otis installation is Otis' best salesman. That's why we're never satisfied with anything less than peak performance at all times.**

This 4,000-pound gas truck has a low center of gravity that gives it good stability despite its short length.

• • •

The Baker-Raulang Company, maker of Gas and Electric Trucks, is a subsidiary of the Otis Elevator Company.

Baker® industrial trucks

OFFICES IN 297 CITIES ACROSS THE UNITED STATES AND CANADA

Good Lighting (Cont'd from Page 62)

where we know it will be easier to see.

Detailed work in an industrial plant demands a high level of illumination in order to speed production and assure accuracy. It is important to recognize the fact that improving a worker's output by this method does not increase fatigue. Rather, it reduces fatigue, because the task is made easier to perform.

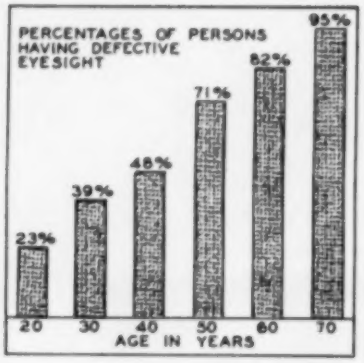
Brightness

When light strikes a surface, some of it is absorbed and some is reflected. A dark object under a given illumination reflects less light than a white object under the same illumination. The white object is obviously brighter, and generally speaking is easier to see. Thus in a plant where dark materials are worked, more illumination is necessary to assure good seeing.

The illumination should be well diffused in order to keep brightness in the range of visual comfort. A well-engineered lighting system will provide a high level of illumination with controlled brightness for good seeing.

Differences in brightness or contrast, aids in visibility. For example, a white thread on a dark cloth is readily visible even under relatively low levels of illumination. Conversely, a black thread on dark cloth is difficult to see even under quite high levels of illumination. We must increase the illumination considerably to see it with some degree of ease. If the printing on this page was done with white ink, the words would not be visible. Black ink on white paper creates a high contrast, thereby making it much easier to see.

Acknowledgment of the need for good brightness contrasts in industry will help to correct or improve conditions which make for better production, less spoilage and safety.



The percentage of those having defective eyesight increases with age. While defective eyesight can be corrected in part with spectacles, better lighting will assist materially in helping these eyes to see quickly and accurately.

Time

It takes time to see. One might run quite rapidly over an unfamiliar path in the woods in the daylight. But at night with only moonlight aiding our vision, we could only walk over the same path because we couldn't see quickly enough to avoid stumbling over sticks, stones, or other objects. Workers at speedily moving machines must see quickly to accomplish their tasks with ease and to avoid accidents.

Four Fundamentals

The four fundamentals of seeing — size, brightness, contrast and time—have an important effect on our ability to work. These fundamentals are important because when a worker is hired, we employ his ability to see.

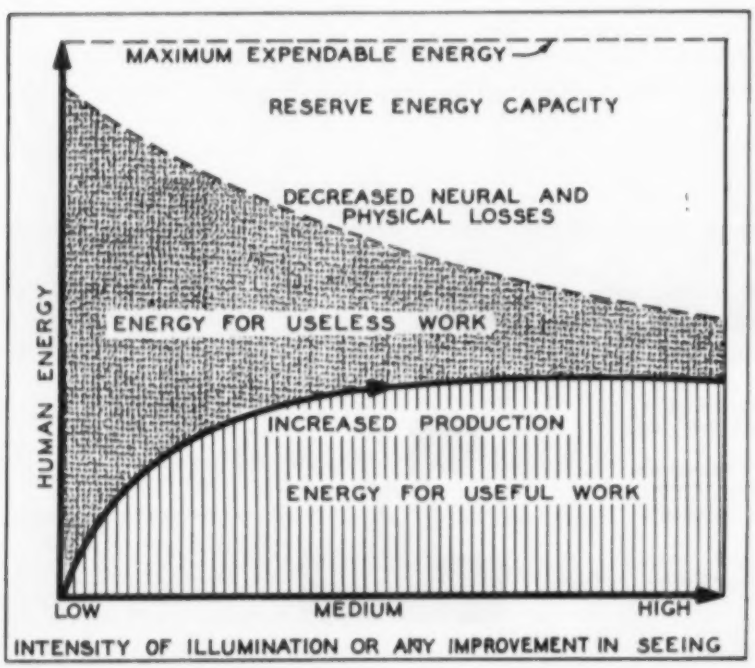
Seeing Requires Effort

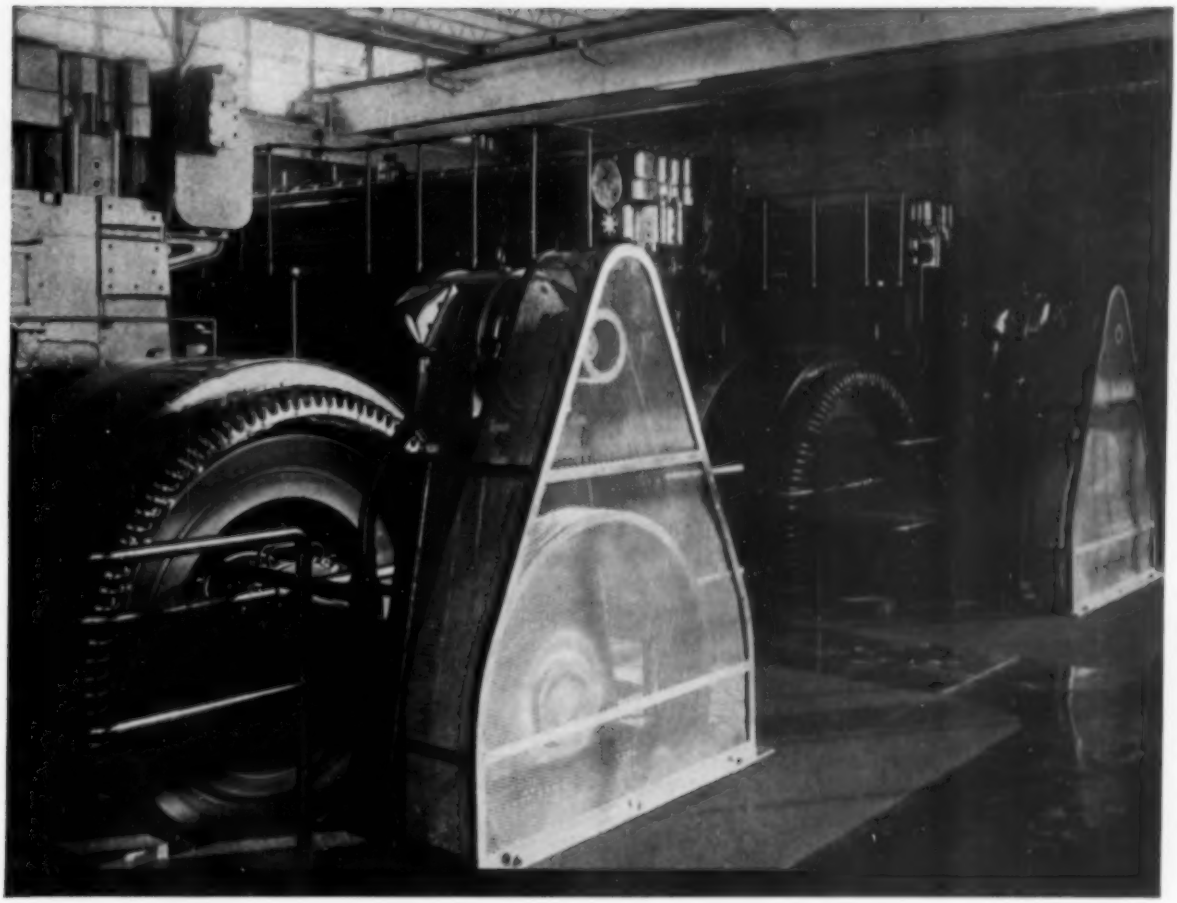
We expend energy when we use our eyes for prolonged periods of time as a worker does in an industrial plant or in an office. An enormous amount of laboratory research has been done to determine the extent of nervous muscular tension when expending energy only through the eyes.

A common example serves to illustrate how we expend this energy. In driving 100 miles on a clear day, one may feel somewhat

(*Continued on Page* 68)

The energy expended to perform a given task decreases as illumination is increased, thereby enabling a worker to produce more without additional fatigue.





Wins Award

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Dino, the Sinclair Dinosaur, says:

"Send *now* for free pamphlet on RUBILENE!"

Thumb Electric Cooperative, Michigan, has won the Diesel Progress Award for 1956 for the best operated internal combustion REA plant in America for 5,000 KW or less.

Their management says: "We attribute our operating success in a large measure to Sinclair's RUBILENE® HD 40 Diesel Lubricating Oil used in our three 1850 HP Cooper Bessemer Diesel engines. We have found this oil to be superior under our rugged load carrying conditions. It has given us an excellent rate of consumption while reducing wear. Of great help, too, are the regular visits of the Sinclair Lubrication Engineers."

Let Sinclair give *you* a big assist, too, in the success of *your* operation. Call your nearest Sinclair Representative, or write Sinclair Refining Company, Technical Service Division, 600 Fifth Avenue, New York 20, N. Y. *There's no obligation.*

SINCLAIR DIESEL LUBRICANTS

Good Lighting

(*Continued from Page 66*)

tired from sitting in the car for the period of time it took to drive that distance. But after driving the same 100 miles on a rainy or foggy night, the fatigue is markedly greater due to the more difficult seeing task. It is much more difficult to see the road through the wet windshield or fog. The wheel is gripped more tightly, the nervous strain being transmitted through the whole body.

Good lighting in the plant will ease the workers strain in seeing, he can accomplish more and do his work with greater accuracy since a minimum of energy is expended in nervous muscular tension. The *human seeing machine* is a part of the plant's "machinery" for fast economical, aecurate production.

The question naturally arises: How much light do we need to perform various visual tasks? From time to time illumination standards have been published by authoritative sources such as the Illuminating Engineering Society, the American Standards Association and the lamp manufacturers. With each new publication, the levels of illumination have been raised appreciably. This is due to the development of new light sources, new equipment which more adequately guards against glare, new engineering methods of design and lower cost of light.

More Foot-Candles

The term "foot-candle" is the unit of illumination. Outdoors, on a sunny summer day, the illumination may measure 10,000 foot-candles. Relatively few factories and mills have 50 to 100 foot-candles. We obviously have far to go but progress in the lighting art is being made each day. More plants are installing lighting systems to provide 100 to 200 foot-candles of general illumination.

Levels of this order must of course, pay their way. A California plant installed a new lighting system which provided 150 foot-candles. The Vice President states, "We often pay as much for a single machine to do one operation more efficiently as we invested in the lighting which greatly assists all operations in the production area. . . . We feel that the lighting is more than paying for itself."

A Texas manufacturer states, "after one year's operation, we find that the benefits from our lighting system are exceeding our expectations. Productivity has increased about 30% with corresponding reductions in rejects.

While production increases are always important, it must be remembered that pleasant, comfortable environment for the worker, cutback in absenteeism, less rejects and less labor turnover, all contribute materially, even though intangibly, to lower production costs.

Part 2 of this series will follow in the August issue. The title will be "What Constitutes Good Lighting."

Safe Conveyor Belt Idler

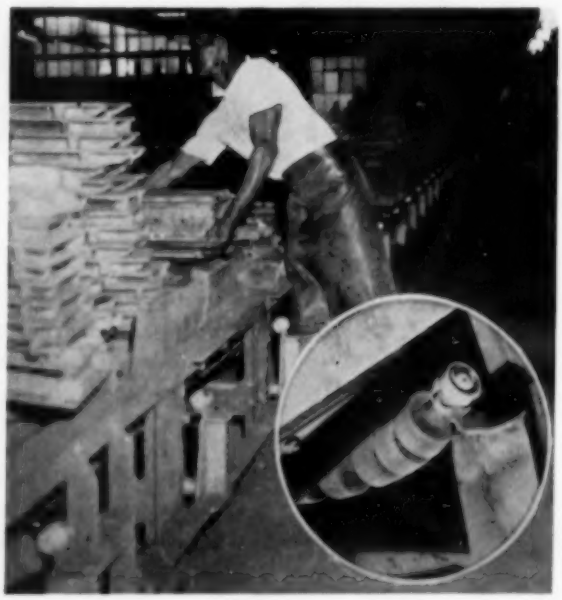
A PROBLEM involving high maintenance, parts replacement, lost man-hours and lost operating time was experienced in a large molding shop. Foundry sand spilled over from the conveyor belt and lodged in the steel belt idlers. The sand inevitably worked its way into bearings and froze the idler rollers. The belt traveling across the immobile idlers wore through the steel, creating a sharp edge which sliced the belt. The belt had to be replaced, idling the foundry.

Regular inspection tours sometimes detected the frozen idler rollers in time, but replacement meant shutting down the line for at least a half day.

To solve the problem, steel idlers were removed and replaced by a new kind of conveyor belt idler called the Limeberoller. (See picture inset.)

Developed by Joy Manufacturing Company, the Limeberoller is a flexible, single roll belt conveyor idler suspended from a bearing at each end to form a natural catenary. It forms its own trough, turns on its own axis, and provides a simple and efficient intermediate support for a belt conveyor.

The installation, in the foundry was made two years ago and the conveyor belt operation has been trouble-free ever since. Lost-time due to frozen idler rollers is a thing of the past.



It's a good idea to look before you leap

Common sense—and it applies to a lot of things. Tubing selection, for instance. If your job includes specifying pipe and tubing for your plant, you can get expert help with your analysis before you actually buy. That's looking before leaping.

How to go about it? Just write or call National Tube. Our technically trained Mill Service Force, available for consultation in the field if requested, will analyze your specifications and recommend the most suitable material for the job at the lowest cost to you. You can order with confidence, too, because you'll have 60-odd years of tubing experience behind that recommendation. What will this advice cost you? Nothing. It's part of our service.

National Tube manufactures seamless pipe and tubes in a complete range of steel analyses from low carbon through the alloys up to and including stainless steels. A wide range of sizes and wall thicknesses is available for every mechanical and pressure purpose. That's why our recommendations to you can be absolutely unbiased.

See The United States Steel Hour.
Televised alternate weeks. Consult your local newspaper for time and station.

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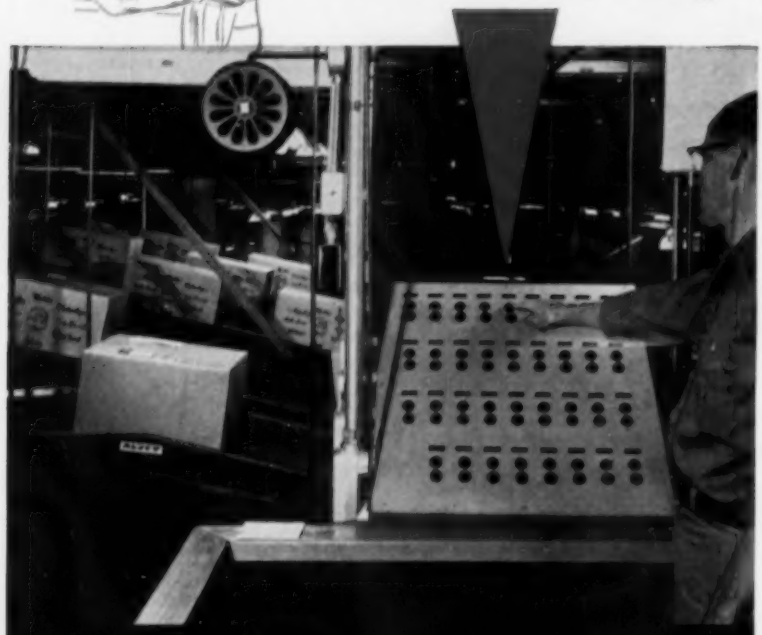

Pushbutton speed and accuracy . . . Heart of Brown Shoe Company's new $2 million shoe distribution warehouse in St. Louis is an integrated 3-mile system of Alvey-engineered conveyors.

An Alvey-engineered conveyor system in your present plant—or the new plant you're contemplating — can bring your package handling costs 'way down . . . and speed up your entire operation.

Alvey engineers are experts at starting with your needs and designing to meet your production and warehousing requirements. Whether you require a plantwide system or a small conveyor line, call in Alvey now.

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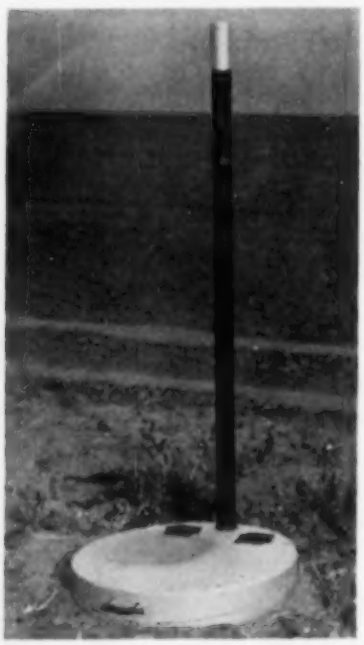
279

Post Marker for Valve Cover

FREQUENTLY a remote control valve must be located some distance from the plant, often in a pasture or cultivated field. To protect the valve stem and wheel, it is customary to fit some type of cover—usually set flush with or close to ground level.

When a section of large diameter pipe is used for valve pit, a cover cut from the pipe on a slope, and with a disc welded to form a top, gives excellent protection to the valve, but is hard to find in vegetation.

One company hinges the cover to its valve pit, and welds a 5 ft section of heavy-walled 2½-in. pipe to the fixed portion to serve three purposes. It acts as rest against which the lip will strike when opened, preventing strain on the hinges; it serves as a landmark for locating the valve; and it is an effective warning to farmers if cultivating or harvesting crops. By leaving the top of the pipe open it may also serve as ventilator for the valve pit — desirable if the buried pipeline carries gas or inflammable fluids.



Control section of Kellogg's electronic computer.

Electronic Route to Lower Steam Power Piping Costs

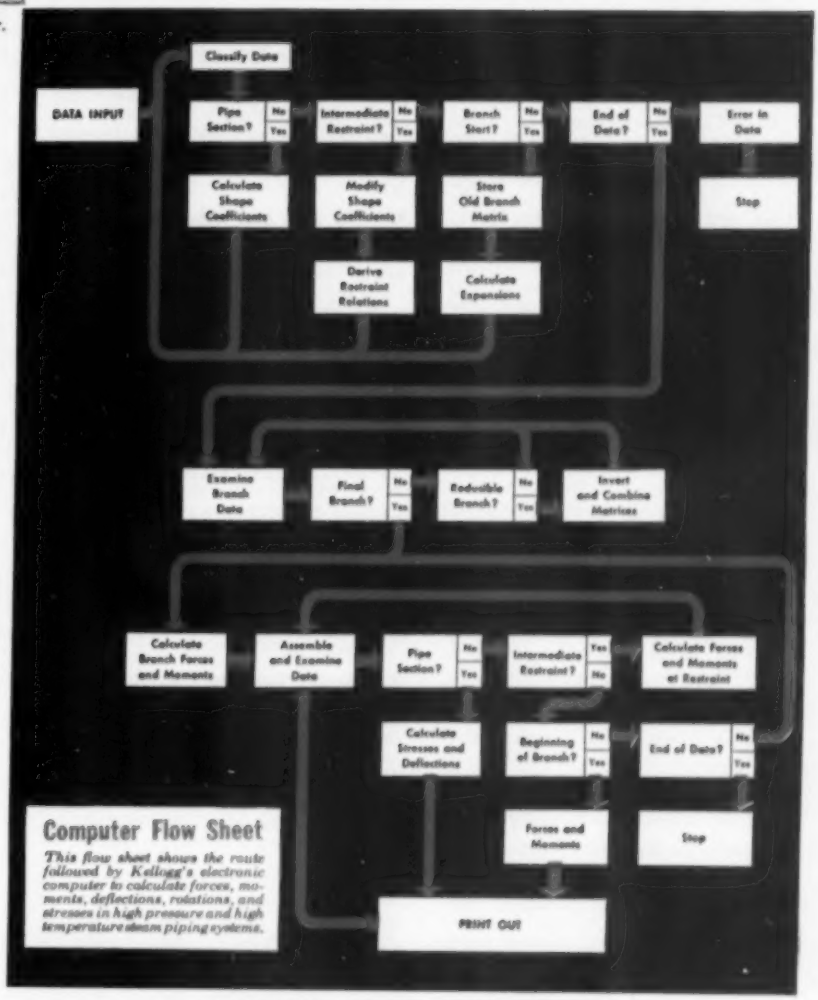
Kellogg's Digital Computer Permits More and Faster Accurate Flexibility Analysis of Complex Main and Reheat Piping Systems

KEEPING PACE with the increasingly critical pressures and temperatures of the modern steam-electric power plant are M. W. Kellogg's advanced techniques for pre-determining stresses and reactions of main and reheat piping. Most recent addition is a large magnetic drum digital computer, used to calculate forces, moments, deflections, rotations, and stresses in complex piping systems.

By enabling Kellogg engineers to undertake a far greater number of calculations in less time than ever before, electronic computation makes possible the ultimate or near ultimate piping system designs. Pipe runs can often be shortened without sacrificing required margins of safety; capital investment and maintenance costs reduced; operating efficiency increased.

A pioneer in flexibility analysis techniques, which include manual calculations, model testing, and a smaller electronic computer, Kellogg continues its pioneering in the power piping industry by the addition of this high speed computer to its New York engineering facilities.

A cordial invitation to see the M. W. Kellogg electronic computer at work is extended to consulting engineers and to engineers of power generating companies and their equipment manufacturers. Appointments may be made through the Sales Manager, Fabricated Products Division.



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NEW Catalogs & Bulletins

STEAM TURBINES . . . FURNACES BOILERS, STOKERS, BURNERS

3—Boiler Seam Protector — Catalogue sheet describes and illustrates why H. R. T. boilers need refractory seam protection. — NATIONAL BOILER PROTECTOR CO.

9—Free Coal Counseling — General information on how Coal Bureau engineers will advise on selection, transportation and utilization of the right coal for your purpose. — NORFOLK AND WESTERN RAILWAY.

11—Feedwater Treatment—Bulletin describes liquid and dry (Braxon & Flako) boiler feedwater treatment recommended for removal and prevention of scaling and corrosion during use of many types of water and for prevention of foaming and carryover. — ANDERSON CHEMICAL CO.

14—Generator Installations — Bulletin GB-1 shows how installations of Amesteam Generators have solved boiler room problems for their owners. Photos illustrate units from 10 through 600 hp for firing combinations of oils and gases. — AMES IRON WORKS, INC.

48—Boiler Tubes — Booklet gives information on care of boiler tubes, causes of chemical attack, etc. Contains charts of weights, working pressures, etc. for boiler tubes and pipe. — BOILER TUBE COMPANY OF AMERICA.

50—Coal Crushers — Catalog 784-C describes single and double roll crushers, swing hammer pulverizers for all sizes of plants. — JEFFREY MANUFACTURING COMPANY.

54—Collector System—Catalog gives advantages of Penaflo — reduces tube erosion, separates large particles, collects smaller particles; Separates large, high-carbon particles for refiring, and small fly ash particles for disposal. — PRAT-DANIEL CORPORATION.

56—Water Tube Boilers — Booklet describes details of stoker — oil or gas or combination gas/oil, 10 to 350 hp to 250 psi; designed for easy conversion to any fuel. — QUEEN CITY ENGINEERING CO.

60—Standardized Generators — Pre-engineered units, available for oil or gas firing, in capacities from 50,000 to 150,000 lb/hr for pressures to 1500 psi and super-heated steam temperatures to 950 F, described in Bulletin B-55-4.—FOSTER WHEELER.

62—Firing Unit — LoStokers efficiently fire small boilers; either firebox or brickset applications; capacity range 3,000 to 12,000 1b/hr. — DETROIT STOKER COMPANY.

80—Hot Water Boilers — 20 page brochure describes and illustrates the design, construction, advantages and economies of the La Mont controlled circulation hot water boiler for supplying high pressure, high temperature water for heating systems and process applications. — COMBUSTION ENGINEERING, INC.

81—Fly Ash and Dust Recovery — Engineering Booklet — Gives data and illustrations on the multiclone mechanical dust collector, showing basic principles and typical application for dust and fly ash recovery. — WESTERN PRECIPITATION CORP.

83—Steam & Hot Water Generators — Booklet describes company's line of fifteen compact models from 18 to 500 hp (15 to 200 psi). Only five connections needed; no special foundation.—CYCLOTHERM DIVISION, NATIONAL - U. S. RADIATOR CORP.

85—Blow-Off Valves — Bulletin E-125 describes design and construction of quick-operating valves, angle valves, Y valves and duplex units specifically designed for boiler blow-off service. — EVERLASTING VALVE CO.

87—Steam Turbines—Single Stage—Bulletin 500 describes features and characteristics of company's type DH steam turbines in horizontal and vertical models. — DEAN HILL PUMP COMPANY, INC.

96—Packaged Gas Burner — Nonpremixing ring gas burner incorporates flame retention regardless of air velocity. Factory assembled forced draft Series H packaged units for gas, rotary oil or combination described in Series B13 literature.—THE WEBSTER ENGINEERING COMPANY.

FANS—PUMPS—COMPRESSORS HEATERS—HEAT EXCHANGERS

101—Heat Exchangers — Bulletin 1.1K5 describes exchangers widely used on engines, compressors and other machinery for cooling lube oil, jacket water, air and gas. Compact, standardized units in wide range of sizes. — ROSS HEAT EXCHANGER DIVISION.

104—Fans — Bulletins F-102 & F-200 describe Type "BL" and "BLH" fans offering high stability and efficiency for all classes of ventilation. Type "BLH" designed for high, broad efficiency curve on higher pressure jobs (6¾" water gauge and up). — BUFFALO FORGE COMPANY.

110—Deaerator — Publ. 4651 describes design that eliminates tubular vent condensers without impairing efficient purging of noncondensible gases. Unit handles wide range of operating conditions. — COCHRANE CORPORATION.

113—Industrial Service Pumps — 16 page Bulletin B-505 describes standard, heavy-duty and special service types offering vertical versatility in pumping liquids from short settings. Capacities: 30 gpm to 40,000 gpm; heads up to 1000 ft. Electric drive up to 2500 hp. — PEERLESS PUMP DIVISION.

116—Air & Gas Compressors—Form 3132-A shows complete range of centrifugal and reciprocating units used in process and chemical industries — for all pressures from deep vacuum up to 35,000 psi and capacities up to 165,000 cfm. — INGERSOLL-RAND COMPANY.

Note Your New Reader SERVICE on Advertisements

122—Industrial Fans—Bulletin 702A covers type XL Fans having 11" thru 60" inlet diameters, pressures to 18" SP, volumes to 130,000 CFM for industrial air and material handling.—CLARAGE FAN CO.

127—General Fans — Bulletin T-158 — A general catalog — describes company's complete line of fans, including large commercial and industrial type fans designed to properly ventilate plants and other enclosures, and increase morale and efficiency. — THE EMERSON ELECTRIC MFG. CO.

128—How to Solve Pumping Problems — Booklet, 36 pages — Explains the functions and characteristics of Rotary gear pumps; sample application problems with charts and curves on pipe friction losses, viscosity conversion tables, materials of construction for various liquids, and additional information pertaining to pump applications.—GEO. D. ROPER CORPORATION.

135—Heat Exchanger — Bulletin 132 shows how sectional Aero unit gives close temperature control,

saves labor, power, and water; design improves heat transfer to outdoor air by evaporation; 7,000,000 to 18,000,000 Btu/hr capacity range. — NIAGARA BLOWER COMPANY.

172—Pumps—Catalog A-156 covers double-suction, general purpose, single-stage centrifugal pumps for general service wherever liquids of low viscosity are to be moved; low maintenance; sizes up to 10 in. discharge.—C. H. WHEELER MANUFACTURING CO.

191—Screw Pumps — Standard gear-in-head, high pressure long body gear-in-head, and standard vertical gear-in-head types described in 12 p Bulletin WQ-S205. Includes design features, sectional views and installation photos. — WARREN PUMPS, INC.

INSTRUMENTS—METERS CONTROLS—REGULATORS

202—General Purpose Controls — 32 p operation and application manual GEA-6372 explains what each product is, shows how product works and tells where devices can be applied. Covers manual, magnetic and reduced-voltage starters; push buttons; relays; limit switches; solenoids; pressure and vacuum, float and plugging & anti-plugging switches. — GENERAL ELECTRIC COMPANY.

205—Draft Gages — Bulletins describe inclined, vertical tube, air filter gages, straight line and dial pointer type, minified draft and receiver type gages, velocity gages and pitot tubes, gas analyzers and steam calorimeters. — ELLISON DRAFT GAGE CO.

209—Liquid Level Controls—Catalog describes controls for almost any liquid, at any pressure, at any temperature. Can be furnished in top-mounting, side-mounting styles, or as external float cage units. Almost unlimited application. — MAGNETROL, INC.

224—Precision Relays — Bulletin MRM 240 describes new high limit and how limit action relays for alarm signalling and on-off operation of electrical loads. — MANNING, MAXWELL & MOORE, INC.

225—Cooling Controls — Self-powered controls for compressors, stills, solvent coolers, degreasers, small engines, etc., described in Bulletin 710B; operational and hook-up sketches.—SARCO COMPANY, INC.

238—Auxiliary Alarm on Remote Gages — Bulletin C6—Describes EYE-HYE remote reading gages with electronic adaptation which actuate auxiliary audible or visible signals at high or low water levels. — RELIANCE GAUGE COLUMN CO.

242—Control Valves—Catalog 1500-B—Illustrated—Describes complete line of Domotor, solenoid-operated and handwheel single seat control valves for handling difficult fluids under extremes of temperature and pressure. Offers full, un-

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restricted flow, positive plug and seat alignment and directional flow flexibility. — THE ANNIN COMPANY.

244—Desuperheater — Bulletin 1024 shows how steam assist desuperheater delivers more accurate control of final steam temperature for process work or auxiliaries. Close control, even at 10 degrees above saturated temperature. Minimum maintenance and long service life. — COPES - VULCAN DIVISION, BLAW-KNOX COMPANY.

254—Pilot Pressure Controller — Bulletin D-4 — Describes the dependable Wizard pilot, Series 4100U, in a new gas type weatherproof case for flush or surface panel mounting, available with either bellows or Bourdon tube measuring elements for pressures from inches of water to 10,000 psi. — FISHER GOVERNOR CO.

255—Annunciator Systems — Catalog 100B describes Panalarm annunciator system; includes use, data on operating sequences, enclosures, mechanical specifications, remote equipment and components, and performance features. — PANALARM DIV., PANELLIT, INC.

263—Meters and Controls — 8 page Bulletin G15-1 describes measuring, transmitting, receiving, recording, and indicating instruments and control components for power and process applications. Includes literature reference for each product as well as twenty-four instrument and control applications.—BAILEY METER COMPANY.

267—Remote Liquid Level Indicator — How clear, brilliant readings from any angle are possible with this unit is explained in Bulletin WG-1824. Pointer is always visible even at extreme high and low water levels. Of manometric type with automatic temperature compensation. — YARNALL-WARING COMPANY.

268—Water Reducing Valve — Bulletin 553 describes how 50% greater capacity regulation is gained with Hi-Flo water pressure valve. Includes complete sizing data. — LESLIE CO.

280—Valve Manifolds — Bulletin 56-1 explains how the new Equa-Safe manifolds stop mercury blowing and damage to differential bellows and diaphragms. Give excellent protection to differential pressure type instruments. Can be completely dismantled without breaking any pipe connections and inlet seat can be dressed up in place. — REPUBLIC FLOW METERS CO.

PLANT EQUIPMENT—WELDING TOOLS—PROCESS SPECIALTIES

312—Low Temperature Welding — Wall chart TIS 2616 lists torch and arc welding applications for all metal-working jobs. Enables the weldor to adopt the best alloys and procedures for repairs. Helps stock clerks and purchasing agents concerned with welding alloy selection. —EUTECTIC WELDING ALLOYS CORPORATION.

315—Pressure Vessels — Catalog 100 discusses your plate fabrication problems and shows how company custom-fabricates hot water storage heaters, tanks, air receivers, blow-off tanks, etc. Corrosion resistant linings and materials featured. Suggested specifications and other valuable technical data given. — J. J. FINNIGAN CO.

318—Wrought Iron — "ABC's of Wrought Iron"—A concise digest of more detailed technical handbook material on wrought iron—describes resistance to corrosion, fabrication process—where needed—shock and vibration endurance.—A. M. BYERS.

336—Retaining Walls — Catalog RW 3555 shows how bin-type walls stabilize slopes and gain valuable

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ground for buildings, parking areas; all-metal cellular construction; all-bolted assembly means small crews can do the job.—ARMCO DRAINAGE & METAL PRODUCTS, INC.

351—Steel Grating & Treads—Bulletin 2486 describes electroforged steel grating and treads, their advantages and typical successful applications. — BLAW-KNOX EQUIPMENT DIVISION, BLAW - KNOX COMPANY.

363—Magnetic Separators — Catalog 910 covers wet concentration and magnetic recovery. Various types and sizes shown as well as typical installations and machines. — JEFFREY MFG. CO.

367—Industrial Track — How you can save with relaying rails outlined in Catalogs RT-9. Covers switch material and accessories. — L. B. FOSTER CO.

371—Storage Racks — How you can make your own with Tube-Strut universal clamps described in TSB-2. One clamp builds every type of storage rack. Used with ordinary pipe or tubing. — TUBE-STRUT DIVISION.

376—Safety Grating & Treads — Bul. R-655 describes Relgrit, a non-absorbent tough abrasive baked into V-shaped openings along top edges. Non-skid even when wet, muddy or oil soaked. — RELIANCE STEEL PRODUCTS CO.

386—Rigid Frame Buildings—8 page bulletin "Dixisteel Rigid Frame Buildings" — low cost, flexibility of design, durability, and minimum maintenance; also triangular or bow-string truss all-steel roof systems; fabricated for rapid erection. — ATLANTIC STEEL COMPANY.

387—Chemical Feeders — Bulletin 50TS — Describes Series 5D feeders for use on boiler feedwater pumps and in similar applications. Several models and types of drive are shown. — MANZEL DIVISION.

PIPING, VALVES, FITTINGS STEAM SPECIALTIES, TRAPS

402—Forged Steel Valves — 32 page supplement of Catalog F-9 covers new general purpose gate, globe and angle valves for 150-800 lb service. Featuring hard faced seating surfaces. — HENRY VOGT MACHINE CO.

403—Valve Operators—Folder shows how re-designed sprocket rim makes any valve readily accessible from the floor. Simplifies pipe layouts, prevents accidents, fits all valve wheels. — BABBITT STEAM SPECIALTY CO.

404—Pipe Unions — 26 p illustrated bulletin covers Jefferson line of pipe unions, giving sizes, capacities of unions, union ells, union tees and flange unions.—JEFFERSON UNION CO.

409—Lubricated Plug Valves—Catalog PV-4 covers operational features. Quarter-turn to open or close; lubricant grooves provide positive seal when valve is closed; when open, seating surfaces not exposed. — THE WM. POWELL COMPANY.

410—Piping Insulation Manual — "Technical Data Manual," 20 p booklet, gives engineers all available information on the application of Gilsulate, a new insulation for underground hot pipes. Describes three grades, how to determine ditch size for various pipes and types of soil, and gives sample problems.—AMERICAN GILSONITE COMPANY.

419—Small Gate Valve — Multiple applications of small forged steel gate valve noted in Catalog 10. Low maintenance. Sizes from ¼" to 2"; rising stem with yoke or rising stem with inside screw; Pressures from 380 psi at 1000 F to 2000 psi at 100 F. — THE CHAPMAN VALVE MFG. COMPANY.

426—Pressure Regulating Valves — Standard line of regulating valves for steam, water and air service described in Cat. 77. Complete specification data. — MASON-NEILAN DIV.

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Page 73

445—Heat Transfer Medium — How new solid medium can give you savings up to 75% over jacketed equipment outlined in brochure. Non-metallic plastic compound easily applied in paste form over either steam traced or thermal electric systems; wide temperature range. — THERMON MFG. CO.

455—Plastic Valves & Fittings — Brochure covers company's extensive line of new corrosion-resistant valves and pipe fittings molded from rigid polyvinyl chloride. — WALWORTH COMPANY.

460—Aluminum Jacketing — Applicable for protecting lines, tanks, towers, or vessels. Booklet shows simplified inexpensive applications in process industries, commercial buildings, etc. — ASEECO, INC.

461—Reducing Valves—Bulletin 1027 describes Type CV-D (diaphragm) and Type CV-P (piston) reducing valves for application at unlimited pressures for pipe sizes up to 16". Either direct or reverse action; high rangeability. — COPES-VULCAN DIVISION, BLAW-KNOX COMPANY.

471—Steel Pipe—⅛" thru 30" spiral weld, electric weld, butt weld, seamless, lap weld, and continuous pipe described in Catalog PL-9. Warehouse stocks in South & Southwest. — L. B. FOSTER CO.

475—Chrome Alloy Pipe & Tubing—No. 620 stock list tabulates available low chrome alloy pipe and tubing for high temperature use. — MIDCONTINENT TUBE SERVICE, INC.

MAINTENANCE PACKING GASKETS, LUBRICATION

505—Metal Cutters — Bulletin 655 shows actual cost figures on various metal cutting jobs (bolt, rod, wire, chain, etc.) by using cutters, hand and power-operated cutters. — H. K. PORTER, INC.

509—Rust Solvent — Data sheet describes "Liquid Wrench" a penetrating rust solvent that loosens rusted bolts, nuts, screws and "frozen" parts. Safe for all metals and alloys. — RADIATOR SPECIALTY CO.

513—Conveyor Belt Repairs — Bulletin R-700 and Folder R-4 describe the "Rema" method of making vulcanized repairs without heat. Holes, gouges, rips and tears can be repaired on the job. Curing time delay is eliminated. Belts can be put into service immediately after repair is made.—FLEXIBLE STEEL LACING COMPANY.

514—Hot Spray Heaters — Bulletin SPI-32 gives questions and answers on "Why Hot Spray Protective Coatings." Gives you lower painting costs — viscosity control, greater coverage, better quality, time and material savings, longer film life and all-weather spraying.—SPEE-FLO.

523—Boiler Gaskets — Catalog describes wire-inserted woven asbestos and spiral wound metal-asbestos — for manholes, handholes and tube caps of all makes of stationary and marine boilers, water walls, economizers, etc. — THE BELMONT PACKING & RUBBER CO.

556—Rubber Expansion Joints — Correct vibration, noise and flange breakage. For service handling any liquid or gas. Folder AD-137 gives details. — THE GARLOCK PACKING COMPANY.

561—Return Line Corrosion — Bulletin CP-100 discusses Amine treatment, an effective and economical way to eliminate corrosion troubles. — THE BIRD-ARCHER COMPANY.

570—Multi-Purpose Grease — Bulletins describe new single product Gulfcrown grease (4 consistencies) that does the work of many — simplifies application and avoids errors, reduces inventory and cuts lubrication costs; grease gun or centralized system application. — GULF OIL CORPORATION.

584—Zinc Coatings — Bulletin describes Galvanox, a special zinc coating applied as a paint to provide galvanic protection to metals. — SUBOX, INC.

WATER TREATMENT, HEATING VENTILATING, AIR CONDITIONING REFRIGERATION, DUST & FUME CONTROL

703—Air Conditioning—Bulletins 112 and 122 describe "controlled humidity" method where cooling and heating functions are made com-

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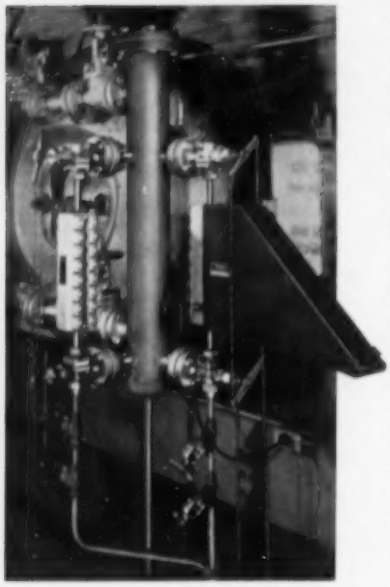

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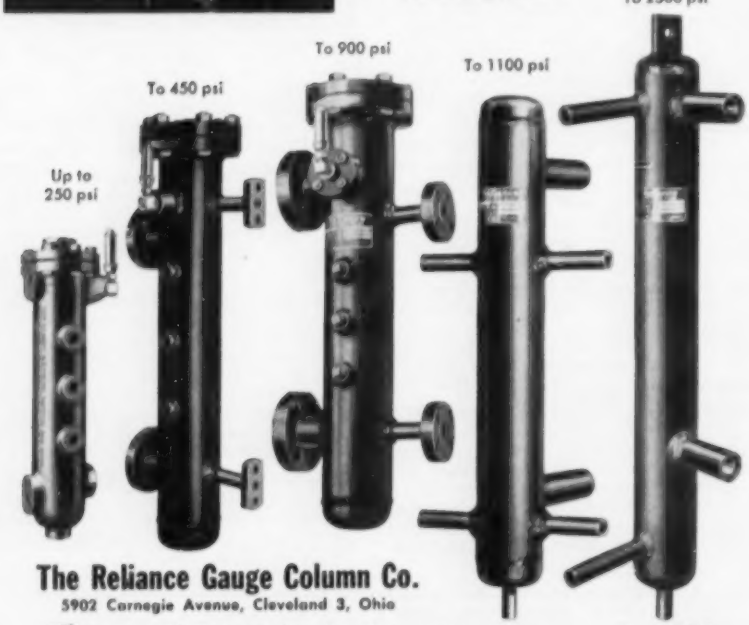

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706—Automatic Roof Cooling—Bulletin shows how automatic evaporative roof cooling can reduce inside temperature 8 to 15° without air conditioning; increase roof life; and reduce fire hazards. Many Southern installations. — APRIL SHOWERS — SOUTHERN.

715—Amine Treatment — Return line corrosion is a critical problem in maintaining economical, efficient power plant operation. Bulletin CP-100 shows how amine treatment is an easy, effective and economical way to eliminate pipe corrosion problems. — THE BIRD ARCHER COMPANY.

723—Dust Collection — Catalog describes mechanical and electrical systems which meet most rigid anti-air-pollution codes; low resistance fly ash collector which combines top efficiency with low draft loss for natural or forced draft installations. — BUELL ENGINEERING COMPANY.

735—Refrigerating Machine—Bulletin 1426 describes the Tonrac single-stage hermetic centrifugal refrigerating machine, which maintains constant chilled-water temperature regardless of load. Single level construction simplifies installation.—AMERICAN BLOWER CORPORATION.

743—Cooling System Cleaning — Bulletins show how Formet crystals will prevent scale formation and corrosion and remove existing deposits. No proportioning devices needed. — THE PEROLIN COMPANY, INC.

779—Water Screens — Bulletin contains information on traveling water screens for positive removal of floating debris and suspended matter from power station and water treatment plant influent. Includes data sheet for estimating. — JEFFREY MFG. CO.

784—Refrigeration Valves and Fittings—Catalog 0, 40 pages—Describes valves and fittings for ammonia, Freon and other refrigerants, for use in industrial refrigeration, ice making and air conditioning. — FRICK CO.

ELECTRICAL

803—Shielded Electrification — Bulletin KS-1 describes "Kant Shock" for monorail and crane systems. Shielding prevents accidental contact with live bus bars. Eliminates all hazards of open bar conductors, prevents costly accidents, protects employees and reduces insurance rates. — AMERICAN MONORAIL CO.

811—Electric Heat — "100 Ways to Apply Electric Heat" gives a wealth of informative data on the use of electric heat in industry — fast, uniform, dependable, backed by

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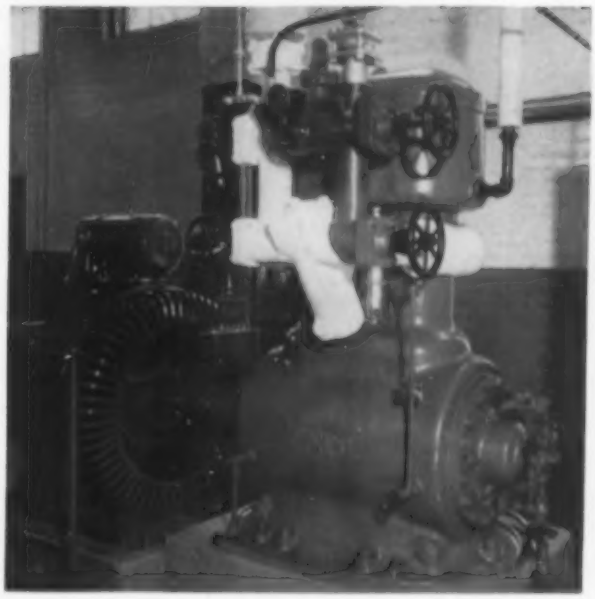

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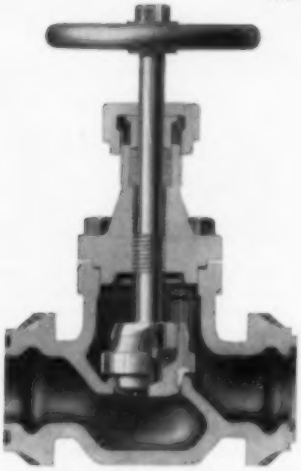

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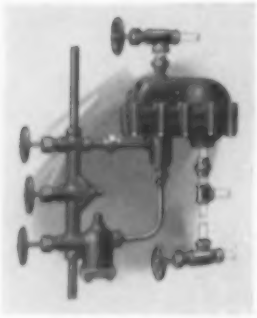

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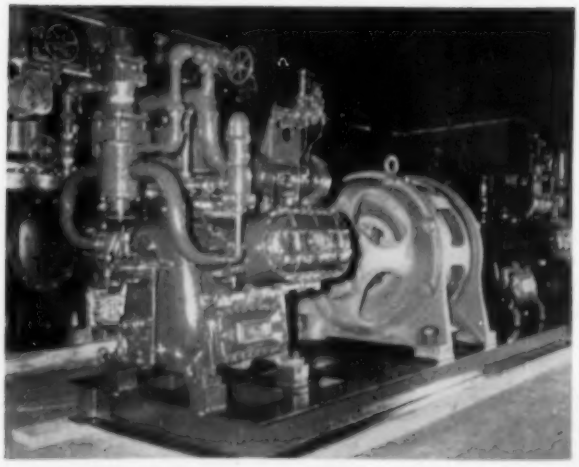

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nation-wide engineering service. — EDWIN L. WIEGAND CO.

815—Induction Motors — How spiral ventilation of two-pole motors eliminates hot spots and cuts windage noise described in Bulletin 05B8123A. Fans drive air through holes in yoke, cooling stator lamination pockets, stator coils and absorbing heat from the rotor. — ALLIS-CHALMERS.

842—Circuit Protection — Bulletin FIS describes the maintenance free Fusetron fuses which protect motors, solenoids, coils and transformers against burnout, and which increase production by eliminating needless blows.—BUSSMANN MFG. CO.

860—Capacitors — Correct power factor at the load. Bulletin PF-1150 describes self-contained capacitors in sizes from ½ to 15 kvar. No additional switches or fuses required. — SPRAGUE ELECTRIC COMPANY.

862—Motor Starters — Manual, autotransformer type recommended where characteristics of driven load or power company rules require reduced voltage starting. Details in Bulletin 646. — ALLEN-BRADLEY.

869—Heaters & Devices — 72 page Bulletin BEC-1005H includes information on redesigned cartridge heaters, miniature soldering irons, aluminized steel sheath strip heaters, and new ratings and configurations of finned tubular heaters. Describes ceramic-to-metal and plastic resin hermetic seals. Also contains power requirements section. — GENERAL ELECTRIC CO.

879—Commutator Maintenance — 27 page booklet B-6150-A contains information on brush and commutator maintenance. Includes maintenance requirements, factors affecting commutation and carbon brush materials. — WESTINGHOUSE ELECTRIC CORP.

Materials Handling Ideas & Methods

ENGINES, DRIVES
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600—Conveyor Idlers — Bulletin SI-116 describes pre-lubricated "UST" Conveyor Idlers. Incorporating Timken bearings and Garlock Klozures, construction permits operating without lubrication for 1-3 years or more. — CONTINENTAL GIN COMPANY.

613—Monorail Applications — Bulletin C-1 — "Handling Problems Solved" — gives hundreds of illustrations of monorail applications to handling problems in various industries. Equipment advantages also illustrated. — AMERICAN MONORAIL CO.

624—Freight Elevators—Booklet A-414 describes the new Plunger Electric Freight Elevator designed for low-rise, light and heavy duty freight handling requirements. — OTIS ELEVATOR COMPANY.

629—Longer V-Belt Life — 12 page Bulletin 20X6234C describes various types of V-belts and tells how to select and match them. Lists seven steps for correct installation and hints for making them last longer.—ALLIS-CHALMERS MFG. CO.

630 — Mechanical Vibrating Conveyors — Catalog 890 gives information on conveyability and density of typical solid materials and provides data on how to "Do It Yourself" to get required length. — JEFFREY MFG. CO.

648—Belt Fastening Tools — Bulletins F-110 and F-111 describe new Flexco power tool wrenches and power tool boring punches, designed to speed up fastening of wide conveyor belts; and give recommendations on the use of various impact tools connected therewith. — FLEXIBLE STEEL LACING CO.

666—Electric Power Drives—12 page catalog contains cut-away drawings illustrating various features of variable speed and slow speed gear reduction units, and totally enclosed splash-proof motors. Includes mounting and control information. — STERLING ELECTRIC MOTORS.

672—Electric Traveling Cranes — Type SB heavy duty overhead cranes (from 5 to 40 tons capacity) described in Catalog 219. Single or with high speed auxiliary hoist; choice of speeds and for any spans required. — SHAW-BOX CRANE & HOIST DIVISION.

694 — Stock Roller Chains and Sprockets — Catalog No. 754, 66 pages — Describes and illustrates Stock roller chains and sprockets including minimum and finished bore, ready-to-use TaperLock bushed sprockets as well as chain selection and application data. — DIAMOND CHAIN COMPANY, INC.

696—Belt Manlifts — Catalog 5A-156 describes 3 sizes of belt-type manlifts for simultaneous traffic in both directions for plant personnel. Comply with A.S.S. Code requirements. — J. B. EHRSAM & SONS MFG. CO.

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See Pages 73-74

S-1 — Transfer Bridges — 4 page bulletin illustrates and describes various types of transfer bridges which allow plant traffic "short cuts" across railroad tracks. — ROTARY LIFT CO., 1054 Kansas, Memphis 2, Tenn.

S-2 — Shielded Electrification — 8 page Bulletin KS-1 illustrates and gives advantages of polyvinyl chloride shielded electrification for overhead handling systems, Kant-Shock Shielding. — THE AMERICAN MONORAIL CO., 13107 Athens Ave., Cleveland 7, Ohio.

S-3—Universal Clamp—Bulletin describes the one clamp which builds every type of storage rack—pallet, drum, bar-stock and general purpose, which fills every structural requirement; and which does the job faster, stronger, and more economically. — TUBE-STRUT DIV., TUBULAR STRUCTURES CORP. OF AMERICA, 2960 Marsh St., Los Angeles 39, Calif.

S-4 — Standard Racks — Bulletin "M-H Standard Racks" gives 30 illustrations and descriptions for complete line of racks to handle all types of industrial storage. Includes power driven, manually pushed and stationary racks for live and still storage.—M-H STANDARD CORP., 513-521 Communipaw Ave., Jersey City, N. J.

S-5—Rotary Feeder—6 page Data Sheet DVc describes Type B Rotary Feeder for heavy duty materials handling applications. Features permit regulated quantities, accurate feed and positive shutoff in handling dry, free-flowing granular and pulverized solids.—ALLEN-SHERMAN-HOFF CO., 259 E. Lancaster Ave., Wynnewood, Pa.

S-6—Catalytic Purifiers—"Sweetening the Fork Truck's Breath" describes removal of carbon monoxide and other air contaminants from exhausts of LP-gas-powered trucks by catalytic purifiers.—OXY-CATALYST, INC., Wayne, Pa.

S-7—Casters & Wheels—Catalog No. C-57 illustrates, describes and gives full specifications for company's line of industrial casters and wheels. — THE FAIRBANKS CO., 393 Lafayette St., New York 3, N. Y.

(Continued on Page 80)

Fuel cost survey proves coal best for Poinsett Hotel

The Poinsett Hotel, Greenville, S.C., recently decided to increase steam capacity by adding a new boiler in its power plant. At the time, management asked its consultants, The McPherson Company, of Greenville, to analyze costs of all three types of fuel available in that area. On the basis of cost per thousand pounds of steam, the other two fuels proved to cost 25% more than bituminous coal. According to The McPherson Company, "The net result of this study indicated that by continuing with the use of bituminous coal the owners would save on both the initial investment and on operating costs."

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Over 12" to 14" Inclusive	7/16"	168" maximum, 24" minimum
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Over 20" to 24" Inclusive	1/2"	88" maximum
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This is standard piping. Special cylindrical shapes in comparable high alloy steel can be cast centrifugally . . . retorts, furnaces, fractionaters and other such equipment come in this class.

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Bulletins (Cont'd)

S-8—Rebuilding Conveyor Belts — Booklet describes the new national service for repairing and rebuilding large conveyor belts. — CONVEYOR BELT SERVICE, INC., 705 Sixth Avenue North, Virginia, Minnesota.

S-9—Hydraulic Ramp—Catalog RE-403A illustrates and describes Leva-Dock, a hinged, self-leveling ramp positioned by an hydraulic jack so that power trucks can move in and out of trucks and trailers without using steel plates, bridge ramps or slow and expensive methods.—ROTARY LIFT CO., Memphis 2, Tenn.

S-10—Ladder Leveler—Data Sheet describes the Levelit, the completely automatic mechanical ladder leveler which can be set on any uneven surface from 0 to 28 in. differential. Designed for adjustable fit on all sizes wood or metal extension type ladders, old or new. — UNIQUE IRON WORKS, INC., 405 N. Mechanic St., Jackson, Mich.

S-11—Adjustable Voltage Drives—16 page catalog describes AV Drive, serving industry wherever exacting control of a d-c motor is required and only a-c power is available.—WESTINGHOUSE MOTOR & CONTROL DIV., Buffalo, N. Y.

S-12—Conveyor Scales — 6 page brochure illustrates and describes the Conveyco Scale which gives accurate weighing with uninterrupted material flow. — THE HOWE SCALE CO., Rutland, Vt.

S-13—Tractor Shovel—Form No. 307 describes Payloader Tractor Shovel which features power-shifted transmission, torque-converter and planetary final drives, torque-proportioning differentials, 40 degree bucket breakout at ground level, powerful pry-out action, 4-wheel hydraulic power brakes, power-boosted steering, closed, pressure-controlled hydraulic system and double-acting hydraulic system.—THE FRANK G. HOUGH CO., Libertyville, Ill.

S-14—Electric Hoist—Bulletin 158-E illustrates and describes Lodestar, the heavy duty version of the small electric hoist. Includes specification charts and accessory information. — CHISHOLM - MOORE HOIST DIV., COLUMBUS McKINNON CHAIN CORP., Fremont Ave., Tonawanda, N. Y.

S-15 — Motive-Power Batteries — Form 5161 is revision of complete reference catalog on motive-power batteries. Includes new features of Exide-Ironclad batteries used in electric industrial trucks and mine vehicles. — EXIDE INDUSTRIAL DIV., THE ELECTRIC STORAGE BATTERY CO., Box 8109, Philadelphia 1, Pa.

S-16 — Automatic Dockboards — 4 page Bulletin No. D-160 describes the Hi-Lo fully automatic

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Here dependable, non-slip, long-life Diamond Roller Chain drives are of prime importance—*there are no other outlets for the production lines.*

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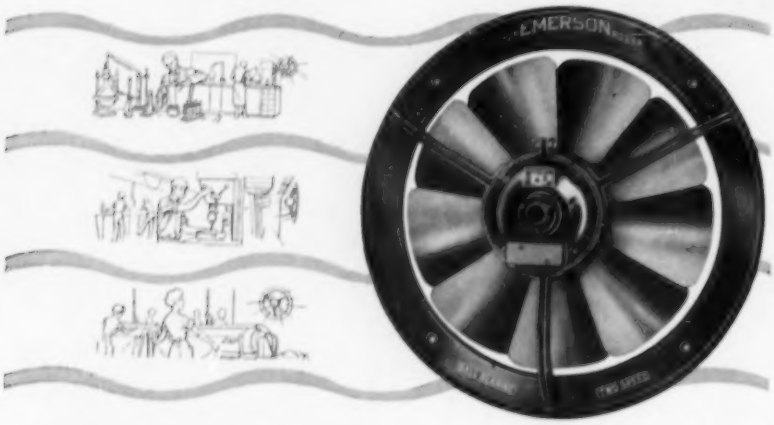
DIAMOND ROLLER CHAINS

EMERSON-ELECTRIC

Exhaust Fans

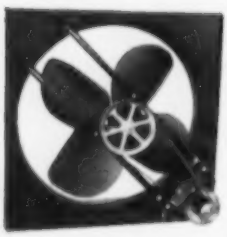
put new life in lazy air!



Reduce fatigue...keep personnel alert and efficient by removing excessive heat, steam, dust and odors!

These EMERSON-ELECTRIC exhaust fans actually cut down your labor costs by helping to keep personnel working at top efficiency. Heat, dust, odors and steam are removed from plants and laboratories . . . reducing fatigue and making work more pleasant.

EMERSON-ELECTRIC Direct-Drive ball-bearing Exhaust Fans have fully enclosed motors . . . self-cooling for continuous operation. Available in 12" single-speed and 16", 18", 24" and 30" two-speed models, capacities up to 6700 C.F.M. Three other models, 12", 16" and 18" with sleeve-bearing motors, have automatic outside shutters attached. Write for Bulletin No. 2025 today! The Emerson Electric Mfg. Co., St. Louis 21, Mo.



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Move large volumes of air quietly and economically. Deep-pitched balanced blades are driven by powerful Emerson-Electric lifetime motors. Five sizes—24" to 48"

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Bulletins (Cont'd)

dockboards for fast, safe, completely mechanized materials handling. — THE KELLEY CO., INC., 316 East Silver Spring Dr., Milwaukee 17, Wisconsin.

S-17 — Maintenance Telescopers — Bulletin 55-D describes the various models of Hi-Reach Telescopers which provide the utmost in safety and convenience while doing overhead cleaning, painting, installation and maintenance work.—ECONOMY ENGINEERING CO., 4511 W. Lake St., Chicago 24, Ill.

S-18—Metal Framing—Catalog No. 600 illustrates and describes company's system of mechanical supports which are adjustable, re-usable, and which require no drilling, welding or skilled men for installation.—UNISTRUT PRODUCTS CO., 933 Washington Blvd., Chicago 7, Ill.

S-19 — Wire Rope Slings — 4 page brochure gives details of assembling-your-own wire rope slings by using standard components — links, shackles, hooks, and sling bodies. — AMERICAN CHAIN & CABLE CO., INC., Wire Rope Sling Dept., Wilkes-Barre, Pa.

S-20 — Vacuum Lifter — Data Sheet describes Air-Lift, the hand model vacuum lifter, which lifts and moves bulky hard-to-handle materials easily, safely, quickly and inexpensively. — INTERNATIONAL STAPLE & MACHINE CO., Material Handling Div., Herrin, Ill.

S-21 — Overhead Handling Equipment — Bulletin PU-50-0 illustrates and describes 15 types of overhead handling equipment which help to overcome problem of raising productivity and lowering costs. —CHISHOLM-MOORE HOIST DIV., COLUMBUS McKINNON CHAIN CORP., 6067 Fremont Ave., Tonawanda, New York.

S-22—Screw Conveyors & Accessories — Bulletin 2755 describes screw conveyors available in all sizes up to ¾" thick by 72" diameter, as well as numerous accessories.—THOMAS CONVEYOR CO., INC., Box 6, Burleson, Tex.

S-23 — Automatic Ramp—AIA File No. 35-i-141 describes Rail-O-Matic mobile dock ramp which rides its own rail to service entire length of railroad loading dock. Includes specifications.—THE WAYNE PUMP CO., Industrial Div., Fort Wayne 4, Indiana.

S-24—Truck & Floor Cranes—2 page bulletin gives dimensions and capacities for company's line of hydraulic cranes, plus detailed tables and specifications for truck cranes and 8 floor cranes.—UHRDEN, INC., Tubar Crane Div., Dennison, Ohio.

S-25 — Pul-Lifts — 8 page catalog 5092 covers line of roller chain and link chain Pul-Lifts, a lightweight ratchet hoist produced in ca-

pacities of ¾ ton to 15 tons.—THE YALE & TOWNE MFG. CO., 11,000 Roosevelt Blvd., Philadelphia 15, Pa.

S-26 — Screw Conveyor Drives — Catalog SCD-57 makes selection of drives for screw conveyors a simple matter. Covers line of shaft-mounted "Screw-King" speed reducers available in 3 reduction ratios for screw conveyors requiring up to 10 hp and speeds from 15 to 290 rpm. —THE AMERICAN PULLEY CO., 4201 Wissahickon Ave., Philadelphia 29, Pa.

S-27 — Conveyor Belts — Catalog 25 CB covers new style designations of general service, heavy duty types of conveyor belts made with special strength members. Gives tension ratings for vulcanized and metal splices, minimum recommended pulley diameters and minimum belt width for good troughing. — RAYBESTOS-MANHATTAN, INC., Manhattan Rubber Div., Passaic, New Jersey.

S-28—Bridge Cranes—Bulletin DH-459A describes B-47 Hand Traveling Crane, available in capacities of 3 to 10 tons with spans up to 50 ft. Contains data on construction details, weights, dimensions, etc. — WRIGHT HOIST DIV., AMERICAN CHAIN & CABLE CO., INC., York, Pa.

S-29—Hydraulic Shock Absorber—4 page brochure describes the hydraulic system which cushions shock and vibration, giving fork lift a smoother, faster ride.—TOWMOTOR CORP., 1226 East 152nd St., Cleveland 10, Ohio.

S-30—Screw Conveyors—Data Sheet offers prompt deliveries of stainless steel screws, troughs and complete systems. — M-H STANDARD CORP., 517 Communipaw Ave., Jersey City 4, New Jersey.

S-31 — Remote Digital Weights — Form 2975 describes company's digital scanner system which bridges electronically the gap between the indication of weight on the graduated dial at the scale and the accurate recording or indicating of this weight in a digital form at any remote location. Shows some types of equipment with which device can be used. — TOLEDO SCALE CO., Toledo, Ohio.

S-32—Lift Trucks—4 page illustrated bulletin describes Tubar Lift Trucks and materials handling equipment. Lists specifications and details of electric and manual lifting and stacking equipment. — UHRDEN, INC., Tubar Lift Div., Dennison, Ohio.

S-33 — Rail King Tractor—Bulletin 1507 describes Rail King Tractor for use with monorail hand and electric hoists up to 3 tons capacity. Includes dimensions, travel speeds and performance curves. — THE YALE & TOWNE MFG. CO., 11,000 Roosevelt Blvd., Philadelphia 15, Pa.

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The Unbeatable "TEAM"

for smooth operating, floor protective materials handling equipment.

FAIRBANKS "LOCKWELD" (patented)
Steel Casters Without A King-pin

FAIRBANKS "LAMILON" (patent pending)
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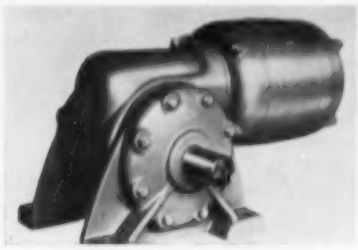
NEW Product Briefs

Right Angle Gear Motors

G-1 **Sterling Electric Motors,** 5401 Telegraph Rd., Los Angeles 22, California, announces that a new line of right angle gear motors from ¼ through 5 hp in all enclosures is now available.



Gear case and motor housings are of aluminum. This heat treated aluminum casting absorbs the high torque characteristic of gear motors, has good heat transfer properties and is corrosion-resistant. High thrust and radial capacity is obtained through tapered bearings on the output shaft which assures alignment and avoids damaging pre-loading conditions.

Since many gear motors are applied on lighter pieces of machinery and often require portability, the aluminum construction offers an evident savings in weight, as well as providing a smooth finish which can be easily cleaned — ideal for food and chemical applications.

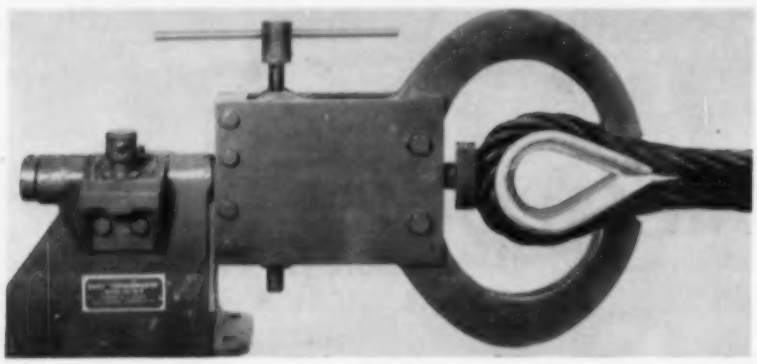
Wire Rope Splicer

G-2 **Quay Industries,** 2135 Riverside Ave., Jacksonville, Florida, manufacturers of wire rope splicers and accessories have announced the new "Torquemaster" splicing unit. Model 10-B for 1⅛" wire rope. This supplements other splicers with ¼" to 1" capacities.

Clamping jaws and thimble block are adjusted so that the block backs up the wire rope against the head of the thimble. Jaws should be rotated counter to the lay of the cable sufficiently to remove the initial tension in the standing part of the cable. Brake can be tightened so as to prevent counter-rotation but still permit jaws to be rotated against the lay of the cable by manual pressure.

Once the initial tension on the standing part of the cable has been removed, the strands in the bitter end may then be quickly run through. With a slight rotation counter to the lay of the cable, each strand can be brought on top and run through without the operator having to look underneath the cable. The loose ends of the strand can be given the desired tightness by using wire tightener, or by normal hand pressure.

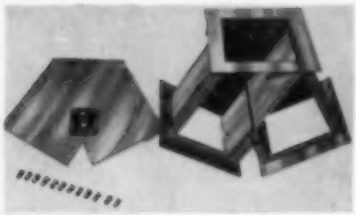
Small assembly unit weighs 49 lb and the large splicer 65 lb. Large unit 10-B has a capacity from ⅛" to 1⅛" with an additional thimble block for ¼". Small unit 10-B has a capacity range from ¼" to 1". Data sheet, available from the manufacturer, gives complete operating instructions.



Aluminum Trolley Hoists

G-3 **Shaw-Box Crane & Hoist Division** of Manning, Maxwell & Moore, Muskegon, Michigan, has announced two new lines of lightweight "Budgit" Aluminum Army Type Trolley Hoists. One line (photo) is hand geared and includes models with capacities from one thru ten tons. The other features push-type trolley hoists ranging from ⅛ ton capacity thru ten tons.

One of the features of this new design is its adaptability to a wide range of I-beam sizes by simply rearranging spacer washers on the cross shafts. This overcomes the disadvantage of older army type hoists which are built to fit only one specified size I-beam and cannot be adapted to others.



Standard Pantleg Chute With Flop Gates

G-4 A standardized pantleg chute equipped with flop gate is available from **Bucket Elevator Co.**, 360 Springfield Ave., Summit, N. J., for ready attachment to duct work, screw conveyors, bucket elevators or other machinery where a stream of material must be diverted from one direction to another.

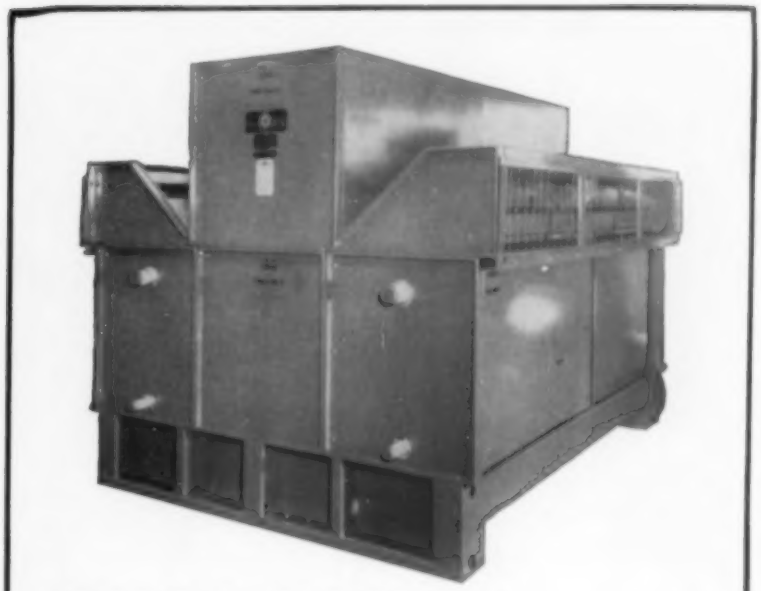
Obtainable in nominal sizes of 6", 9", 10", 12", 14" and 16", with corresponding dimensions for opening, flange center distance and height, the side of the unit can be completely removed to facilitate cleaning. An added feature, optional at extra cost, is a lucite side which makes visible the actual operation of the flop gate and the flow of materials while in process.

Called the Buck-El Pantleg Chute with Flop Gate, the chute is available with a flop gate that can be worked manually through a tilt bar, or by chains to floor level, or air-operated by means of an air piston.

Speed Reducers

G-5 A new line of double and triple reduction speed reducers, with ratings up to 50 hp and efficiency ranges from 97% or better, have been announced by **Western Gear Corporation** of Lynwood, California.

The new speed reducers bear the trade name "Strait Line."



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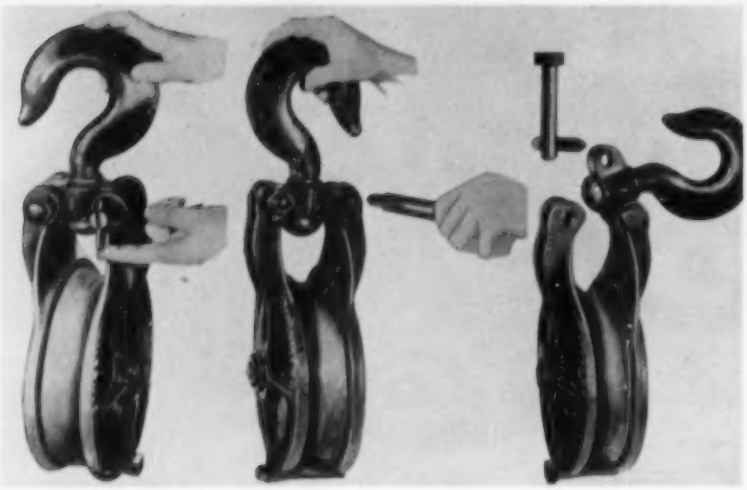
NIAGARA — *Over 40 Years' Service in Industrial Air Engineering*

New Product Briefs (Continued)



Lightweight Block

G-6 A new heavy duty Rigger-Slusher block is now available from **Sauerman Bros., Inc.**, 620 S. 28th Ave., Bellwood, Ill. This new addition to their line of Durolite blocks is lighter than comparable blocks and practically shatter-proof. Made of high quality alloy steel, it will withstand 14-ton dead loads without damage. Wide flange permits use of up to and including ¾-in. wire rope.

The block has wide applications for rigging work. A cast bead on the housing keeps rope in groove, even when block is working in a horizontal position. Quick opening design permits easy handling in cramped quarters.

The Rigger - Slusher Durolite weighs only 44 lb and is available with roller or bronze bearings. Sheave diameter is 10 in. Overall length is 23 in. with swivel hook and 19 in. with stiff shackle.

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Hydraulic Drum Lift

G-7 **Sterling, Fleischman Co.**, Box 94, Broomall, Pa., has made available their new Model BM 3 "High Boy" Sterling Hydraulic Drum Lift, which will lift to a maximum height of better than 72" for greater ease in pouring contents of containers and drums into mixing vats, tanks, etc.

The hydraulic jack is actuated by a foot operated pedal and will lift at the rate of 1½" per pedal depression. Lifting weight capacity is 750 lb. The unit is mounted on 4" oil, gas and spark proof ball-bearing casters for easy maneuverability and safety in hazardous areas and is equipped with floor-locks to hold it rigidly in position and with drum locks to hold drums in pouring position. Release of drum lock permits rotating drums 360° for mixing contents before pouring.

Special girdles for handling cylinders, carboys and other steel barrels are also available.

Adjustable-Speed Drives

G-8 **The American Pulley Company,** 4200 Wissahickon Ave., Philadelphia 29, Penna., has recently added two "C" Groove Adjustable-Speed Drives to its line of Standard Adjustable-Speed Drives. Drives are possible by the greater horse-power transmitting capacity of the company's "Super-Service" Wedgbelts.

When driving in the horsepower range centering around 15 and 20 hp and motor speeds of 1160 and 1750 rpm, it is now generally more economical to select 2 "C" Groove Super-Service belts in place of 4 or 5 "B" Groove Belts. New drives permit stepless speed adjustments up to 26%. The three new pitch diameters are: 8.5—10.7 P.D.; 9.5—11.7 P.D.; and 10.5—17.7 P.D. A split tapered bushing is available for the three diameters.

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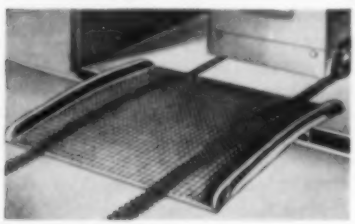

Magnesium Truck Ramp

G-9 To speed up truck loading and unloading operations, **Penco Engineering Co.,** 25 California St., San Francisco 11, Calif., is marketing the Penco magnesium ramp, a portable, lightweight, all welded ramp for loads up to 5,000 lb.

Ramps have beveled edges and safety side rails. A stop holds unit in position. Trucks can back to within 3 in. of dock.

IF IT'S EXPOSED TO RUST—
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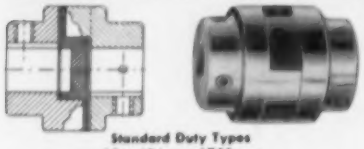
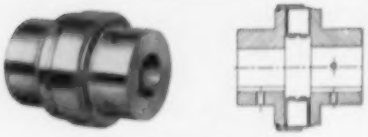
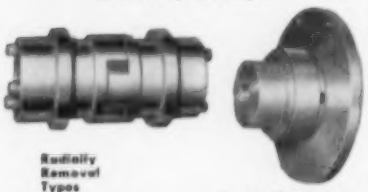


Standard Duty Types
.05 to 40 hp. at 1750 rpm.



Medium and Heavy Duty Types
2.6 to 810 hp. at 100 rpm.



Radially Removal Types
1.9 to 30 hp. at 100 rpm.—2 to 40 hp. at 1800 rpm.

Flange-Mounted Types
11 to 740 hp. at 900 rpm.

Put Trouble-Free Performance Into Your Equipment

COMPARE THESE FEATURES:

- A type and size perfectly suited to your application.
- Year-after-year dependability, regardless of load or operating conditions.
- Completely machined for ease and speed of alignment.
- No lubrication required.
- Simple, rugged construction—few parts and no intricate mechanisms.
- Cushioned power transmission—load is transmitted through cushioning materials—no wear on the metal jaws.
- Double-life cushions—one half the cushions act as idlers, except on reversing loads—quick interchange provides a new set of cushions.

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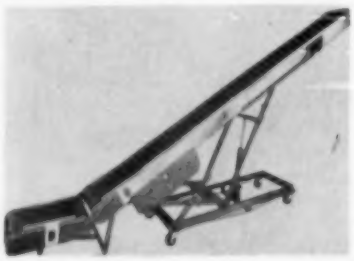
New Product Briefs (Continued)

Portable Yard Ramp

G-10 **The Lite-Line Metal Industries Division of Copperloy Corp.,** 4105 Brookpark Road, Cleveland, Ohio, has introduced a new, all magnesium, yard ramp. This portable ramp permits freight car and truck loading where permanent dock facilities are not available, where existing facilities are overtaxed, or where special loading problems necessitate a portable dock. One man can move and position the ramp.

In use, the ramp is simply moved into position on its 16" diameter, semi-pneumatic tired wheels. The upper end is raised to proper loading height by a manual hydraulic lift, and a positive locking device is secured in place preventing the ramp from pulling away from the carrier during use.

As optional equipment, the ramp can be fitted with pneumatic tires, electric-hydraulic lift or with galvanized, expanded steel tread surface covering. Lite-Line ramps are 30 ft long and are available in four capacities—6,000, 10,000, 12,000, and 16,000 lb.



Portable Belt Conveyor

G-11 A new aluminum portable belt conveyor, hydraulically adjustable and specially engineered to facilitate unloading, transferring, boosting and stacking operations, has been developed by the **E. W. Buschman Co.,** Clifton & Spring Grove Aves., Cincinnati 32, Ohio.

The new Trojan Series A Conveyor adjusts by finger-touch to optimum height and angle of incline to suit every materials handling need.

In the extreme raised position, this conveyor provides handy high-low transfer for loading and unloading freight cars, taking bags and boxes away from sealers, etc. In low-level position, it acts as a low-cost power component in wheel and roller conveyor lines. In-between positions can be easily selected to meet a wide range of product handling operations.

Available in 10, 12, 14, 16, 18 and 20 ft lengths, the Trojan Series A operates in both forward and reverse. The non-slip belt, 12" wide, safely elevates at angles up to 30° without cleats; for steeper angles, cleats are available to assure efficient handling.

Heavy - gauge aluminum alloy frame and removable undercarriage fold easily, to make this conveyor extremely compact for low-cost shipment and storage. All moving parts are safely shielded, yet the unit is light in weight for easy mobility.

The power unit, easily removable, includes a ½ hp motor on units up to 16 ft, ¾ hp on units 18 to 20 ft. Belt speed is 55 fpm.

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Platform Truck for Heavy Duty

G-12 Designed for handling odd-shaped and/or extra long loads, particularly where rugged duty is required, a new 20,000 lb capacity low-lift platform truck, Model L-15, has been developed by the **Elwell-Parker Electric Company**, 4205 St. Clair Ave., Cleveland 3, Ohio.

The truck is available with either electric or gasoline-electric power, has two-wheel drive and all-wheel steer.

To insure maximum service, even under severe operation conditions, the frame is built of heavy steel plate. Center sill construction is used with all major units attached directly to the reinforced alloy steel bars which form the sills.

The platform is raised by a double-acting hydraulic cylinder.

The truck features a rocking link type platform lift with powered lowering accomplished with full inching control through a control valve. A safety link protects the lift mechanism in the event the platform is rammed against an obstruction.

Detailed specifications: weight, without power: 9,750 lb; travel speeds, without load: 5 to 6 mph; with full load: 4 to 5 mph; lift, without load: 3 seconds; with full load: 4 seconds.

Door-Operator Motors

G-13 A complete line of instantly reversible door-operator motors specially insulated to resist moist-air conditions for industrial applications has been announced by the **General Electric Company's** General Purpose Motor Department, Schenectady 5, N. Y.

Instantly reversible and reversing-from-standstill models are included in the line of Form G motors. At 1725 rpm, ratings from 1/6- through ¾-hp provide power for door types ranging from light-duty garage doors through heavy-duty commercial and industrial doors.

Designed for operation in any position, the motor has all-angle sleeve bearings and a lubrication system that prevents oil loss even when mounted vertically. For further versatility, the motor can be rotated in its base to meet mounting requirements.

How to get more storage space with BLAW-KNOX Electroforged® Steel Grating

You can get additional badly needed storage space easily and economically in your present building simply by installing platforms of Blaw-Knox Grating. It fits easily, neatly around pipes, beams and machinery without any alterations to your building.

Maintenance costs are slashed in the bargain. There's nothing to wear, nothing to patch. Blaw-Knox grating is self-cleaning too. No sharp corners to clog up with dirt, and you'll find painting is easy since all surfaces are easily accessible.

You get maximum open area for plenty of light and ventilation. What's more, its rigid one-piece construction means maximum structural strength and load bearing capacity.

Blaw-Knox Electroforged Grating for walkways, stair treads and floors is fabricated to your specifications to meet your own operating requirements. Complete data on all types is contained in Bulletin 2527. Write for your copy today.

BLAW-KNOX COMPANY

BLAW-KNOX

Equipment Division
Dept. K, Pittsburgh 38, Pa.

New Product Briefs (Continued)

Giant Wire Rope Sling 3 in. Diam.—72 Ton Load

G-14 The Wire Rope Division, **American Chain & Cable Company, Inc.,** Wilkes-Barre, Pa., is marketing a new giant in wire rope slings—3 in. in diameter and furnished with the patented Dualoc ending. Photo shows the new sling compared with smaller counterpart, the ¼ in. wire rope sling.

Sling's breaking strength is rated at 720,000 lb with a safe working load of 144,000 lb or 72 tons. The sling assembly is proof tested to 288,000 lb, double the safe working load, at the manufacturer's plant.

The new giant wire rope sling fills a need in today's expanding materials handling programs for moving heavy power generating and industrial equipment.

ACCO's line of wire rope slings include 19 diameters from ¼ in. to 3 in. The Dualoc ending, used on all these slings, develops full strength of the wire rope throughout the complete size range. The heavier the applied load, the greater is the developed holding power. No bursting stresses can be developed in the collars when load is applied.

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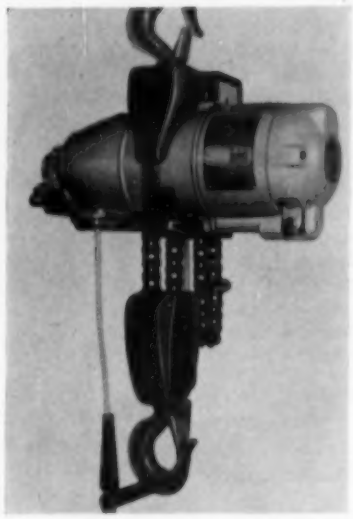
LOS ANGELES	Fred S. Renauld & Co.	*Pleasant 2-6181*
TAMPA	John D. Homan	*Tampa 65-7211*
ATLANTA	E. W. Harbour (College Park)	*Popular 7-1374*
ROANOKE	J. J. Bower	*Roanoke 6-3474*
HAVANA, CUBA	Wm. P. Bryant	*M-9284*
SAN JUAN, P.R.	F. A. Ortez & Co.	*2-4934*

BOILER TUBE CO. OF AMERICA

McKEES ROCKS, PA. (Pittsburgh District) *Federal 1-7750*

3



Air-Powered Hoist

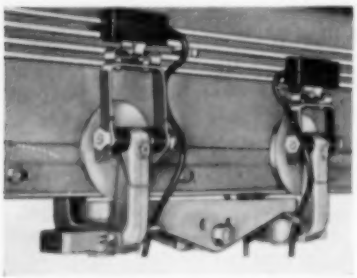
G-15 A new 4,000 lb capacity hoist has been added to the line of air-powered hoists made by **Gardner-Denver Company's** Keller Tool Division at Grand Haven, Michigan.

Fitted with either roller or link chain, the lifting and lowering speed varies from a creep to 10 fpm at full load and 90 psig air line pressure. Length of lift is 8 ft and the hoist operates with either a one-hand control bar or remote pendent control.

A centrifugally governed, fully mechanical brake prevents slippage. When the air supply fails or maximum lowering speed is exceeded, the brake design permits the operator to retain control of the hoist while lowering the load.

Shielded Electrification for Monorail Systems

G-16 By covering its standard bus bar electrification with a specially designed polyvinyl chloride extrusion, **American MonoRail Co.**, 13107 Athens Ave., Cleveland, Ohio, now furnishes completely safe electrified systems.



Under the name "Kant - Shock" this shielding absolutely prevents accidental contact with live bus bars. It is impossible for an adult's finger to enter the shield.

A new type sliding shoe collector provides a floating contact throughout a monorail system regardless of misalignment due to bent bars or at switches and interlocks.

Kant-Shock shielded electrification is mounted in stamped bracket assemblies for live power feed throughout the system at a maximum rating of 600 volts—100 amps. It can be applied in the field, where headroom permits, to existing American MonoRail systems.

Electric Chain Hoists

G-17 Lightweight, electric chain hoists, by the **Wright Hoist Division**, American Chain & Cable Company, Inc., York, Penna., are available in two types of reaving: the 300-2,000 lb capacity, single-chain unit and the 3,000-4,000 lb capacity, double-chain unit.

Operation is arranged for one-hand control with clearly marked handles for Up or Down travel of its hook. Motors are available for operation on all standard voltages and frequencies. For the 115 and 230 volt, single phase classifications, lifting speeds vary from 15 to 3.75 fpm; for the 220/440 volt, reconnectable three phase classification, from 30 to 5 fpm; and for the 550 volt, three phase classification, from 20 to 10 fpm.

look beyond the price . . .

you'll see that you get the most for your money in

MATHEWS CONVEYERS

A push button order filling system in which an operator at a control console directs the flow of material from 66 storage lines. Photo courtesy of Gallo Sales Co.

Most plant operating people, when they buy conveying systems, are looking for the equipment that is best for **their** plant—equipment that is designed to meet their individual requirements. They are looking beyond the price . . . looking to quality—to dependability. Mathews engineers have been designing and building conveying systems for over 50 years, and a great amount of this equipment has been applied in metalworking plants. This is why operating people everywhere have an extra measure of confidence in Mathews equipment—and why you see Mathews Conveyers in metal-producing and fabricating plants everywhere.

MATHEWS CONVEYER COMPANY

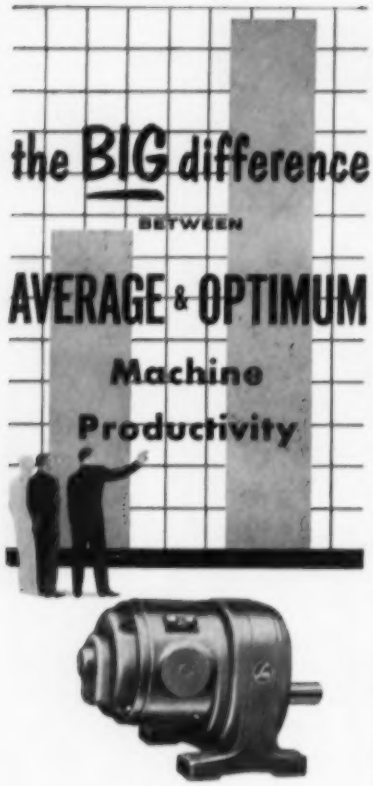
GENERAL OFFICES . . . . . ELLWOOD CITY, PENNSYLVANIA

PACIFIC COAST DIV. . . . MATHEWS CONVEYER COMPANY WEST COAST, SAN CARLOS, CALIFORNIA

CANADIAN DIVISION . MATHEWS CONVEYER COMPANY, LTD., PORT HOPE, ONTARIO.

MATHEWS

Fifty Years of Leadership in Mechanized Handling



Sterling *ELECTRIC*
POWER DRIVES

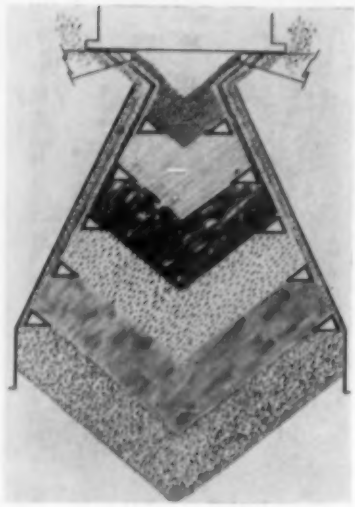
Machinery manufacturers and users in virtually every industry report outstanding performance achievements with Sterling Electric Power Drives...achievements in greater productivity, in greater machine versatility, in lower maintenance cost, in rugged dependability that keeps production running smoothly...achievements that give dollars and cents proof that Sterling Electric Power Drives can make the *big* difference between average and optimum productivity of your machinery and equipment.

Sterling Speed-Trol Variable Speed Motors
Sterling Slo-Speed Gear Motors
Sterling Constant Normal Speed Motors
Sterling Multi-Mount Speed Reducers

Write today for Bulletin No. 185. Discover the big advantages Sterling Electric Power Drives can bring to your plant.

STERLING
ELECTRIC MOTORS
LOS ANGELES 22 • CHICAGO 35
CINCINNATI 37 • NEW YORK 51

New Product Briefs (Continued)



Bulk Materials—Mixing & Blending

G-18 A new method of mixing and blending bulk materials to produce a uniformly homogeneous mixture in a continuous flow has been developed by **Hewitt-Robins, Inc.**, Stamford, Conn. The system is expected to be especially useful in blending various grades of stone for cement production and many other free flowing bulk materials used in chemical and process industries that may be variable in physical characteristics or chemical analysis in the raw state.

The blending is done in a metal or concrete bin containing a series of overlapping baffles which deflect the out-flow to the sides of the container.

Material to be blended is layered into the bin by a conventional belt conveyor tripper on top of a rectangular bin or a simple chute in the case of a cylindrical bin. While the bin is being emptied from the bottom the incoming material is directed into the side chute section in a continuous series of small increments from top to bottom. Blending thus takes place automatically as small portions of each layer enter the chute area and flow downward by gravity. At the bottom of the bin, the material is removed from the outlet shelf by a plow or similar device and taken away by belt conveyor.

The bin can be built any size, depending on the volume of material to be blended. After the bin has been filled, the blending process is carried on continuously by regulating the rate of input to match the rate of draw-off so that material flows through the bin at a steady rate.

Self-Dumping Hopper

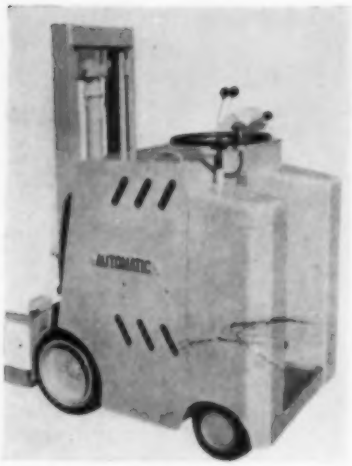
G-19 A new self-dumping hopper only 30 inches wide, designed for handling bulk materials, scrap and waste through narrow aisles and in confined areas, is now available from **Roura Iron Works, Inc.** 1401 Woodland Ave., Detroit, Mich. The hopper will pass through ordinary doors with ease, and has a capacity of 10 cu ft.

Mounted on three casters, the hopper can be pushed manually or transported by fork lift. A push bar at the top of the hopper aids manual movement, and the single rear caster is swiveled to permit sharp turns around tight corners. Pockets built into the frame permit entry of handling truck forks.

The self-dumping action is triggered when the operator releases a locking handle on the rear of the hopper. It rolls forward to dump its contents, then returns to an upright position and automatically locks itself in place. It can be dumped with equal ease while carried by a fork truck or while on the ground.

Empty weight is 450 lb, length is 49 in. and height is 40 in. The 30 in. width is standard, but the hopper can be made narrower for special installations.

For More Free Data CIRCLE CODE NO. on the Handy Return Card — Page 73



Fork Truck for Close Quarters

G-20 A new electrically-operated 1,500 lb capacity lift truck only 48 in. long, has been introduced by the **Automatic Transportation Company**, 149 West 87th St., Chicago, Illinois. Company emphasizes wide application in industrial plants and warehouses plagued with extremely narrow passage-ways.

The truck has a turning radius of 49½ in. and will operate in a 50 in. right angle intersecting aisle. Its lifting height is 135 in. with a mast height of 83 in. or 105 in. of lift with 68 in. mast height. Traveling speed is 5 mph and it is available with either hydraulic mono-lift or duo-lift mechanisms.

Fire Relief Roof Vent

G-21 A new quick-opening "fire vent" to permit rapid escape of smoke, heat and gases in event of fire is announced by **The Swartwout Company**, 18511 Euclid Ave., Cleveland 12, Ohio.

The unit, known as the Pyrojector, installs and operates entirely above the roof line. Two double-wall dampers are opened outward by powerful coil springs when a fusible link melts at 212 F. This creates a roof opening of 28 sq ft. This relief near the fire source helps to limit the horizontal spread of flames and makes fire fighting more effective by revealing the location of flames.

Pyrojector is completely weatherproof when closed. Can be used for extra ventilation in good weather. It can be installed singly or in groups above most likely fire sources.

(*Continued on Page* 100)

Panalarm Annunciator pinpoints process "off-normals"

In the process industries and among users of automatic machinery, trouble is minimized when it's caught early. That's the purpose of the Panalarm Annunciator System—a continuous monitor of your process.

One typical adaptation of the modular Panalarm system is engineered to differentiate between the first "off-normal" and subsequent "off-normals" caused by the first. This feature allows instantaneous recognition of the prime source of trouble in a "chain reaction."

Another adaptation is designed specifically for motor start-up and shutdown. It has also been successfully adapted for supervisory control, pump control and programming.

Your Panalarm sales engineer will be happy to make a survey of your requirements to determine whether a Panalarm system can aid productivity and safety in your process. For electrical and mechanical data on standard systems, request Catalog 100B on your letterhead.

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News for the South & Southwest (Cont'd)

Mex-R-Co—Missouri

In a series of personnel changes, the Board of Directors of **Mexico Refractories Company,** Mexico, Mo., elected **W. Basil Leach** president and elevated the company's founder, **John B. Arthur,** from the presidency to the position of chairman of the board and chief executive officer. Arthur will continue to consult with the management on policy matters.

Mr. Leach, previously vice president and director of sales, has been associated with the Mex-R-Co organization since its formation in 1929.

The Board also announced the election of **C. A. Smith,** vice president and chief engineer, to a newly created position of executive vice president, retaining the responsibility of chief engineer. **Carl H. Bachmann,** production manager of the Mexico, Mo. plant, was elected a vice president; he has been a member of the Board of Directors since early 1955.

G-E—Virginia

Dr. F. Meade Bailey has been named manager of advanced engineering for the **General Electric** Industry Control Department, **Roanoke, Va.,** according to B. W. Mahoney, department general manager.

Rittling—Southwest

Addition of the following sales representatives has been announced by **The Rittling Corporation,** Buffalo, N. Y., manufacturers of complete lines of baseboard radiation, cabinet convectors, unit heaters, back draft dampers and other heating equipment:

J. H. Ballenger, 2067 Beechmont Ave., Cincinnati, Ohio; **D. M. Allen Co.,** 3021 Main St., Kansas City, Missouri; and **Midwest Sales Company,** 11039 Manchester, St. Louis, Missouri.

Silicone Finishes for High Temperature Units

Three years after application, the silicone-aluminum finish on the catalytic cracker at **Cosden Petroleum, Big Spring, Texas,** retained more of its original gleaming appearance than the organic-based finishes did after three months.

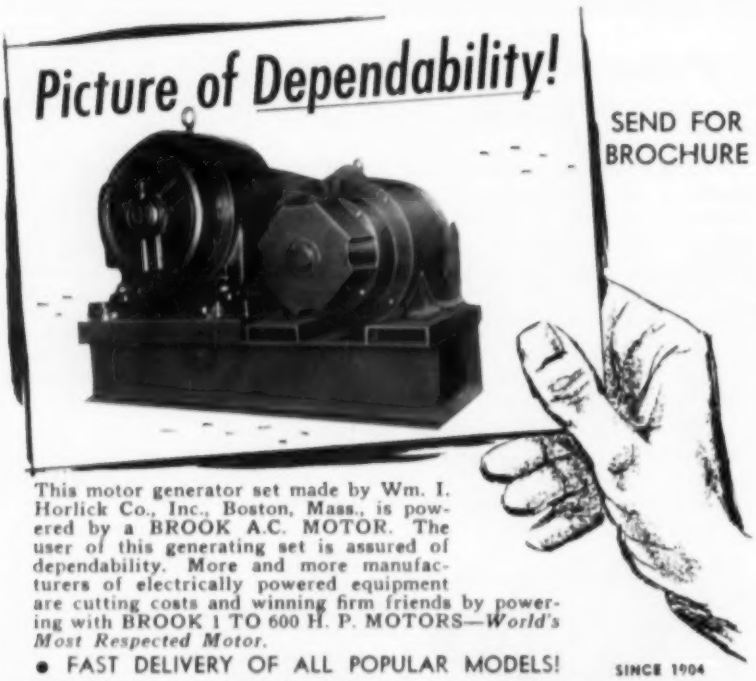
The huge refinery in the flat plains of West Texas is more than a landmark; it's a scenic high spot. Aware of the public relations value, Cosden makes the sight even more impressive by finishing the entire refinery in bright silver and gold, with gleaming red, green and black trim.

Cost of maintaining the attractive appearance used to be heavy, particularly on stacks, furnaces, crackers and similar high temperature units. No conventional finish could withstand the 300 to 900 F surface temperatures, and several rather expensive repaint jobs were required every season.

Then, in the spring of 1953, Cosden tried a silicone-alumium finish on their sky-scraping catalytic cracker. Formulated with Dow Corning Silicones by the Cactus Paint Company, Big Spring, Texas, the coating kept the cracker looking like new for 3 years. What's more, the silicone finish paid for itself several times over in maintenance savings alone. As a result, Cosden specifies silicone finishes for all equipment in high temperature service.

Picture of Dependability!

SEND FOR BROCHURE



This motor generator set made by Wm. I. Horlick Co., Inc., Boston, Mass., is powered by a BROOK A.C. MOTOR. The user of this generating set is assured of dependability. More and more manufacturers of electrically powered equipment are cutting costs and winning firm friends by powering with BROOK 1 TO 600 H. P. MOTORS—*World's Most Respected Motor.*

• FAST DELIVERY OF ALL POPULAR MODELS!

Brook Motors are available from warehouse at Chicago, Dallas, Jersey City, Los Angeles, Memphis, St. Paul, Salt Lake City, San Francisco, Atlanta, Seattle, Tampa, and other major distributing points.

SINCE 1904

BROOK MOTOR CORPORATION

BROOK MOTOR CORPORATION

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Tennessee Plant for The Trane Co.

The Trane Company, one of the nation's major air conditioning and heating equipment manufacturers, has selected **Clarksville, Tennessee**, as the site for its Southern plant.

Plans are to move forward with the plant at Clarksville as soon as possible. The plant, to cost about $2 million to construct and equip for production, will manufacture central residential air conditioners for year-round heating and cooling, marking entry into a new segment of air conditioning for Trane. Production is scheduled for 1958.

Richard Schiewetz will be general manager of the new plant. He has been plant manager of the company's production units at Scranton, Pa.

Gibson Mfg. Co. — Atlanta

Guy C. Rhoad has been named vice president in charge of manufacturing of the **Gibson Manufacturing Company**, Atlanta, Georgia, producers of fluorescent lighting fixtures.

Mr. Rhoad joined the Gibson organization in 1950 as design engineer and has headed the firm's design department since that time.

Many of Mr. Rhoad's designs have been innovations in the industry. He was first to design fixtures with spring-steel louvers, and his Ortho-77 and Ortho-88 commercial and industrial fixtures embody a completely unique concept in lighting installation. These fixtures, which "plug in" on a special wireway and afford automatic spacing and alignment, are said to reduce installation time substantially and to offer a high degree of versatility and flexibility for the owner.

Mr. Rhoad's latest product is the Ceilo-35, a fixture designed for low-ceiling application and claimed by the manufacturer to be thinnest fixture on the market with no dark areas. It features a side-mounting arrangement for the ballasts which eliminates the necessity for concealing the ballasts behind panels in the diffusing area.

In announcing Mr. Rhoad's promotion, R. R. Gibson, president of the Atlanta firm said that the company's sales have more than doubled in the past two years and gave Mr. Rhoad's designs much of the credit for this growth.

What do you need in
IDLERS?
Unit stand with return idler and tripper rail?
Self-aligning troughing idler?
Standard troughing idler?

Now shipping from stock in Birmingham — all conveyor accessories and standard units. Consult us on "specials" — see our nearest office.

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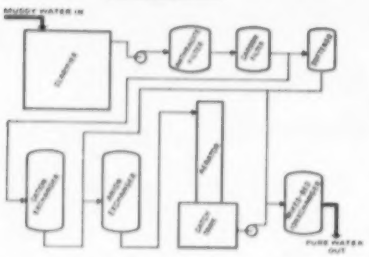
ILLCO-WAY
ionXchange

HIGH-PRESSURE BOILERS NEED PUREST WATER



An ILLCO-WAY System, incorporating up-to-date ionXchange equipment, offers the best opportunity available today for obtaining the high-purity water that modern high-pressure boilers *must* have to avoid serious loss of operating efficiency. Such a System will take the muddiest kind of hard river water and clean it up so that suspended impurities, mineral content, and dissolved solids are reduced to almost unmeasurable quantities. The result — top boiler performance, always, and top *turbine* performance.

ONE SOURCE FOR THE WHOLE SYSTEM

Today, such a System can be obtained, *complete*, from a single source — Illinois Water Treatment Company. We design and manufacture every element to solve successfully the particular application. You do not need to combine a part from here and a portion from there — you get it *all* from us, all tanks, all piping, all valves and controls, all resins and other materials, all carefully selected to suit *your* needs. *Consult our experienced engineers at the next opportunity . . .*

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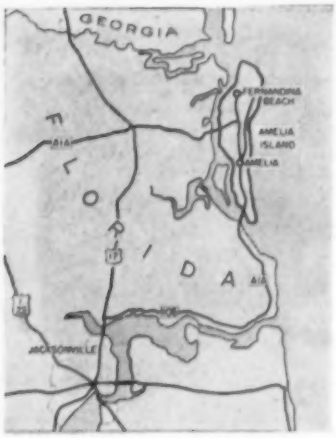
CANADIAN DIST. PUMPS & SOFTENERS, LTD. LONDON, ONT.

News for the South & Southwest (Cont'd)



UCC to Mine Florida Titanium

Plans for mining titanium minerals on **Amelia Island**, about 30 miles northeast of Jacksonville, were announced recently by **Union Carbide and Carbon Corporation.** "Carbide News" recently reported that construction of a processing mill and auxiliary equipment will start shortly and mining is expected to begin in the spring of 1958.

Union Carbide owns approximately 3,000 acres south of Fernandina Beach on Amelia Island, which is about 20 miles long. An exploratory drilling program carried on during the last two years has proved that the area contains economically adequate reserves of heavy minerals, including ilmenite, rutile, zircon, and monazite.

Mining will be done by a bucket-ladder dredge that can handle about 500 tons of sand an hour. The sand will be wet-concentrated on the dredge hull itself.

The concentrated heavy mineral will be transferred ashore and trucked to a dry mill where the minerals will be separated by conventional electrostatic and magnetic methods.

As mining progresses, tailings from the operation will be deposited at the rear of the dredge and the mined-over land restored and replanted. About 15 tons an hour of heavy minerals will be recovered as against 485 tons of tailings.

B, S & B—South & Southwest

To provide an expanding sales organization with closer field supervision, C. A. Silver, Vice President and General Manager of the Controls Division of **Black, Sivalls & Bryson, Inc.,** has announced the promotion of **William M. McGinnis** to Gulf Coast Regional Sales Manager and **Walter Whetstone** to Central Regional Sales Manager.

McGinnis, who has been with the BS&B Controls Division and predecessor companies for 13 years, served as sales and service engineer at Houston for eight years, was promoted to Houston district manager in 1952 and moved to Tulsa in 1956 as Coordinator of National Accounts. As Gulf Coast Regional Manager he will supervise the activities of seven Controls Division sales offices. He will continue as Coordinator of National Accounts.

Whetstone, who has been manager of BS&B's Wayne, Pa. (Philadelphia) office since 1951, will supervise the activities of ten manufacturer's representatives from Atlanta to Detroit and St. Louis to Richmond.

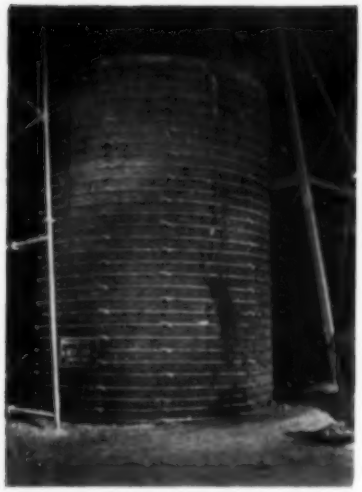
Texas Eastern—La.

J. D. Bland, of Shreveport, has been promoted to general superintendent of the petroleum products division of **Texas Eastern Transmission Corporation,** according to Millard K. Neptune, executive vice-president, petroleum products division. In his new capacity Bland will supervise all operations of Texas Eastern's petroleum products system.

Thor—Southwest

Thor Power Tool Company, Chicago, has moved its **Houston** (Tex.) office to new and larger quarters at 5503 Lawndale Avenue. The branch has been at 7241 Harrisburg Boulevard.

R. F. Caslin, branch manager, said the move would enable the company to provide better sales and service facilities to Texas distributors and users of tools. The Houston branch also serves southern Arkansas and the western fringe of Louisiana.



240 Ton Silo; 530 Ft Under

On Avery Island near **New Iberia, Louisiana,** the **International Salt Co., Inc.,** operates a huge salt mine. The entire mine is carved from solid salt. Part of the excavated salt is crushed, then conveyed into and out of a silo. Because of the dry atmosphere in the mine, the salt does not absorb moisture. So the crushed particles flow in the silo and conveyors as readily as do coal or gravel.

Perhaps no other silo (see photo) was ever erected on such a substantial foundation. The bottom of the silo is 530 ft under the surface. Rock salt comprises the foundation — a dome-like formation believed to be about five miles deep.

The 18 ft x 25 ft silo, constructed by the Neff & Fry Co., will hold about 240 tons of crushed salt. It is used as a surge bin rather than a storage receptacle, so the moderate capacity is sufficient.

G-E Georgia Distributor

The Georgia - Tennessee Supply Company of Gainesville, Ga., has been appointed an authorized **General Electric** distributor of industrial equipment, according to an announcement by C. F. Hazen, president of the distributor firm.

Located at 421 South Green Street, the company is responsible for sales in the northeastern portion of the state. The company will handle all standard types of General Electric motors up to 200 hp and general purpose control, instruments, and transformers, in the light industrial class.

New Regional Sales Offices for Mason-Neilan Div.

Carl W. Gram, Jr., Vice President of Mason-Neilan, Division of Worthington Corp., has announced the creation of a new post of general sales manager and new regional sales headquarters in the Southeast.

A. Blair Powell, recent manager of the Pittsburgh office is now general sales manager with headquarters in Norwood, Mass.

E. Putnam Head is Southeastern regional manager supervising Atlanta, Birmingham, Charlotte, and Jacksonville offices. In addition, **Malcolm D. Duncan** has been appointed manager of a new Jacksonville office.

Mason-Neilan manufacturers control valves, instruments, regulators, level transmitters, automatic tank selectors and specialized control and process systems.

Stromquist—Georgia

Stromquist and Company, Atlanta, Ga., manufacturer's representative for Maxon Premix Burner Company, National - U. S. Radiator Corporation and York Shipley, Inc.—Industrial Division, has announced the addition of **L. A. Prillaman** and **Howard Pope** to its sales force.

Mr. Prillaman has been manager of the heating department for a wholesaler for the past five years. Prior to that position he was with National Radiator Company.

Mr. Pope was recently associated with the United States Navy.

Trane — Jacksonville

Florida Weathermakers, Inc., of Jacksonville, with 20 years air conditioning and heating experience, have been appointed an authorized source for **The Trane Company.**

Vernon Kelly is president of Florida Weathermakers and **Harold Kelly,** vice president.

Lamson Mobilift — Atlanta

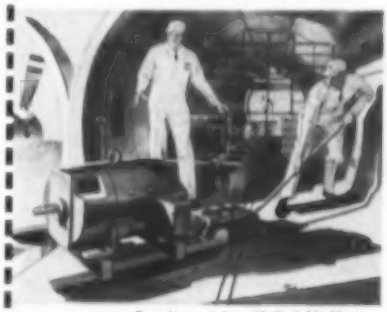
John L. Baldridge is now District Manager of the Southern Region for Lamson Mobilift Corporation of Portland, Oregon. He was District Manager of the Dallas, Texas, office before the recent transfer to **Atlanta, Georgia.** Mr. Baldridge will coordinate all sales and service by Mobilift Dealers in the South.

WESTERN GEAR

TUG-BAR

...pays for itself— speeds-up heavy handling!

Minutes are money in cargo and freight handling and consolidating. When one man with a Tug-Bar handles loads 60 to 70 times the weight of the machine, you're bound to save precious minutes and dollars.



Drawing courtesy United Air Lines

Tug-Bar does the hard work. Motor driven wheels do the pushing and pulling. Tug-Bar is light... only 110 pounds. Optional lips available for special jobs. Standard units in 110V AC or 24V DC.

CLIP AND SAVE

Clip the coupon below ...mail it for full information on Tug-Bar.

Glenn Malme SP
WESTERN GEAR CORPORATION
P.O. Box 182, Lynwood, California

Name_____

Title_____

Company_____

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"The difference is reliability" • Since 1888

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ENGINEERS AND MANUFACTURERS

PLANTS AT LYNWOOD, PASADENA, BELMONT, SAN FRANCISCO (CALIF.), SEATTLE AND HOUSTON— REPRESENTATIVES IN PRINCIPAL CITIES

News for the South & Southwest (Cont'd)

Baker-Raulang — Richmond

The Hugh R. Noel Company, 531 Brook Road, Richmond, Virginia, has been named a distributor for the Baker-Raulang Company. Noel will handle Baker's complete line of gas and electric fork trucks, platform trucks, crane trucks, and the unique Traveloader side-loading fork truck. Service facilities and a complete stock of parts will be maintained.

Chemstrand—Ala. & Fla.

Louis D. Scott is now production projects manager of Chemstrand Corporation's Acrilan plant in Decatur, Alabama, according to **Ken Johnson,** plant manager. Succeeding Mr. Scott as Acrilan plant manufacturing superintendent is **Norman C. Sidebotham** from Chemstrand's Pensacola, Florida, nylon plant.

Newton Anderson

Water Analysis Service

Newton Anderson has resigned as president of the Anderson Chemical Company, Macon, Georgia, and formed a new company known as **Newton Anderson & Company.**

The new firm, also located in Macon, will manufacture a complete line of water-treating chemicals for industry, including scale and rust removers and inhibitors for boilers and air conditioning refrigeration systems.

M. A. Stinnette, former chief chemist for Anderson Chemical Co., and his assistant, **John Mancin,** will head up the new company's modern laboratories which offer a complete water analysis service to industry.

Temco—Dallas

The directors of **Temco Aircraft Corporation** have promoted **John A. Maxwell, Jr.,** from vice president and general manager of the Dallas Division to vice president in charge of sales and contract administration for the corporation, according to Robert McCulloch, Temco president.

The directors also named **Vernon N. Ferguson,** formerly works manager of the Dallas Division, as vice president in charge of manufacturing operations for all plants.

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FOSTER QUALITY RELAYING RAILS

Lower installation and maintenance costs—handle more cars better. Foster nationwide warehouses also stock every New Rail Section 12# through 175#, Switch Material and Accessories to meet your specific job requirements.

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PITTSBURGH 30 • NEW YORK 7 • CHICAGO 4

ATLANTA 8 • HOUSTON 2 • LOS ANGELES 5

CONSIDER THE HAZARD

A conversion burner or stoker in a riveted HRT boiler can cause the girth seam to deteriorate quickly. This is due to the direct impact of intense heat upon the lapped edge of the plate.

The wise thing to do before converting is to insulate the seam with a National Seam Protector. It's a precaution which will surely save a lot of trouble and expense.

Our seam protectors have saved hundreds of HRT boilers during the past 37 years. You'll find the facts interesting and valuable. Write for literature now while you're thinking of it.

NATIONAL BOILER PROTECTOR CO.

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NATIONAL AIROIL FUEL OIL - GAS BURNERS

SERVING INDUSTRY FOR 45 YEARS

- Steam Atomizing Oil Burners
- Mechanical Atomizing Oil Burners
- Low Air Pressure Oil Burners
- Rotary Oil Burners
- Industrial Gas Burners
- Combination Gas and Oil Burners
- Tandem Block Combustion Units
- Fuel Oil Pump Sets
- Refractory Burner and Muffle Blocks
- Valves, Strainers, Furnace Windows

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Established 1912 Incorporated 1917

NATIONAL AIROIL BURNER COMPANY, INC.

1279 E. Sedgley Ave., Philadelphia 34, Pa.

Southwestern Division

2512 So. Blvd., Houston 6, Tex.

Infilco—Ind. Specialty Sales Dept.

Formation of a new department of **Infilco, Inc.,** in response to increasing interest in industrial water and waste treatment and appointment of **G. E. Hauer** to head up its activities has been announced by E. G. Kominek, Vice President and General Sales Manager.

The new division of Infilco will handle the special applications of the company's equipment for liquids treatment in the rapidly expanding industrial field. Working in close cooperation with Infilco's Research and Development Department, the new division will study marketing techniques and special promotion of developments in the fields of water and waste treatment.

James Crist is Pres. of Southern Electric Gen. Co.

James F. Crist, vice president of The Southern Company, has been elected president of **Southern Electric Generating Company.** Southern Electric Generating Company, organized to build and operate large new power facilities, is owned equally by Alabama and Georgia power companies, subsidiaries of The Southern Company, and each will receive half of the power output.

As president of Southern Electric Generating Company, Mr. Crist succeeds **Herbert J. Scholz,** chairman of the board of Southern Services, Inc., who retired from active duty in June. Mr. Scholz, however, will be retained as an independent consultant.

Other officers of Southern Electric Generating Company are: **J. J. McDonough,** president of Georgia Power Company, vice president; **Walter Bouldin,** executive vice president of Alabama Power Company, vice president; **W. D. Ketchum,** vice president of Southern Services, Inc., secretary; and **R. H. Freese,** vice president of Southern Services, treasurer.

Following approval by the Alabama Public Service Commission in April, Southern Electric Generating Company has begun construction of a huge new steam-electric plant in Shelby county, Alabama. Estimated to cost more than $150,000,000, it will have a capacity of 1,000,000 kilowatts, making it one of the nation's largest power plants.

Reynolds Metals — Va.

H. Claude Kelly, recently General Sales Manager in Materials Sales, for North Brothers Insulation Company, Atlanta, Georgia, and formerly Southeastern Field Engineer for Pittsburgh Corning Corporation, has joined **Reynolds Metals Company.**

He will be located in their Richmond, Va., office and will be in charge of Building Products Sales in the State of **Virginia.**

Johns-Manville — Miss.

W. H. Graham, Plant Manager at **Natchez, Mississippi** has been appointed as Plant Manager of the Klamath Falls, Oregon Plant of **Johns-Manville Corp.** His successor as Manager of the J-M Natchez Plant is **Fred A. Morgan,** formerly Superintendent of Production, Finishing, Planning and Scheduling at the same location.

Milton Roy — Fla.

Milton Roy Company, manufacturing engineers of Philadelphia, has started construction on an 18,000 sq ft plant in **St. Petersburg, Florida.** To be completed by early summer, this new modern plant will replace the present "pilot operation" in Gulfport, Florida that was started in 1953.

Presently the Gulfport plant houses facilities for Milton Roy Company's research and development program and for the manufacture of parts for the company's controlled volume pumps.

Dravo Corp. — Nashville

The Vernon S. Tupper Company, 206 Tuck Building, Nashville, Tennessee, has been appointed distributor of Dravo heating equipment for a 32-county area in Tennessee. Dravo Corporation, Pittsburgh, Pa., is one of the world's largest manufacturers of industrial and commercial warm air space heating and process drying equipment.

The Vernon S. Tupper Company will sell Dravo's complete line of oil and gas fired units. These include the Counterflo, Paraflo, and Gas-Fired suspended type heater models, covering a range of capacities from 40,000 to 2,000,000 Btu/hr output.

DON'T GIVE UP!

—ON THAT TOUGH METAL-CUTTING PROBLEM!

USE

HKP® PORTER CUTTERS

JUST CAN'T BE BEATEN . . .

If it's a "hard-to-figure-how", metal-cutting job, — there is a PORTER CUTTER that can handle it for you, with amazing speed, and lowest possible cost. In the versatile PORTER line there are 108 different hand-powered cutters, each one designed to do a particular job, or jobs — to cut some type or size or shape of metal fast and cheap, including BOLTS, RODS, SCREWS, RIVETS, WIRE, CHAIN, SOFT, MEDIUM AND HARD METALS, STEEL STRAPPING, and many others. These rugged cutters exert up to 20,000 pounds cutting pressure — make hard work easy, cut labor costs as much as 97%! Want profitable proof? Write for the PORTER catalog.

Illustrated above — is the famous PORTER CENTER-CUT CUTTER. The leading all-round cutter for industrial production. 8 sizes — up to ⅝" capacity.

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The PORTER WORK-STATION CUTTER — in 3 sizes — can increase the output of one man up to 300% in continuous volume cutting, up to ½" capacity.

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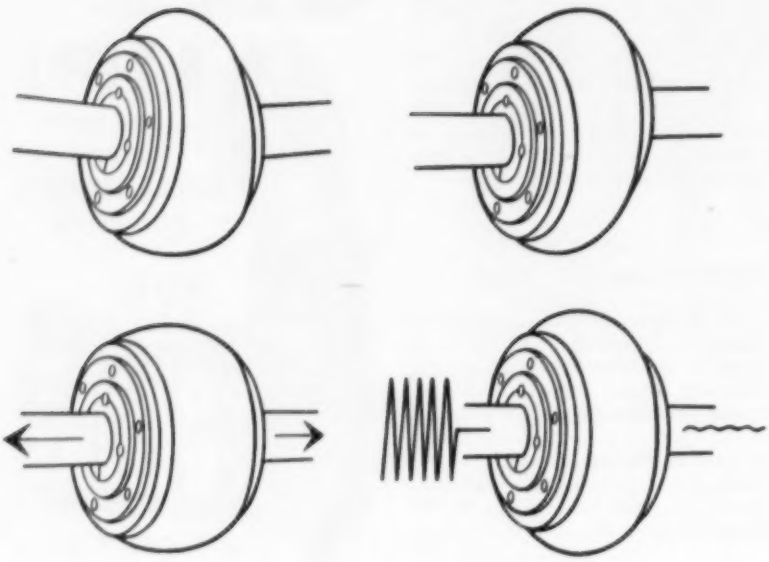
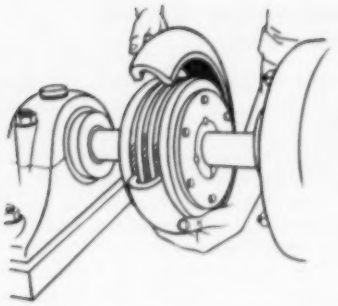
Somerville 43, Mass.





The flexing member can be replaced without moving driver or driven machine.

Para-flex, according to Dodge engineers, will take angular mis-alignment up to four degrees, parallel mis-alignment up to ⅛" and end-float up to 5/16"—contingent upon the size of the coupling and the duration of the conditions—or will take all of these simultaneously. Torsional vibration developed by internal combustion engines, the amplitude of which increases greatly at critical points in the speed range, is absorbed to a great degree.

Flexible Cushion Coupling Features Rubber Tire

G-22 **Dodge Manufacturing Corporation,** Mishawaka, Indiana, recently announced the Para-flex Coupling design, which features a tire with synthetic tension members bonded together in rubber. The four-way flexing body of Para-flex is claimed to out perform the most complex coupling mechanism.

The new flexible member not only handles angular mis-alignment, parallel mis-alignment and end-float but also cushions shock loads and diminishes torsional vibration, thus protecting both the driver and the driven machine. Couplings are available in capacities up to 600 hp at 900 rpm.

The coupling consists of the flexible tire clamped between two hubs which are mounted on the shafts to be coupled. The flexible member is held between the flanges and clamp rings of the hubs.

Both hubs of the coupling are machined to take Taper-Lock bushings. These give the equivalent of a shrunk-on fit on the shaft and permit quick and easy application to shafts of different diameters without costly reboring.

The tire has a transverse split molded into it, which permits easy installation and makes replacement possible without moving driver or driven machine. To make a change it is only necessary to loosen the cap screws enough to allow removal of the tire and to fit a new one in place. Even in very confined spaces this simple operation can be accomplished in a few minutes.

Because there is no metal-to-metal contact in the Para-flex Coupling, it requires no lubrication. No maintenance or regular inspection for lubrication is needed. Safety is promoted by flush design — all cap screws are countersunk; metal surfaces are finished all over; there are no protruding parts.

Electrical Cord Reels

G-23 **Shaw-Box Crane & Hoist Division** of Manning, Maxwell & Moore, Muskegon, Michigan, announces the addition of six new models to its popular line of "Budgit" Cord Reels, thus increasing the maximum horsepower range from a previous 1 hp to a present 7½ hp.

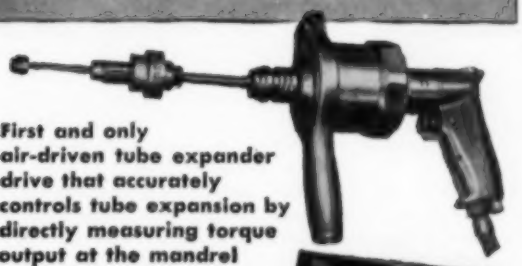
The line now provides a reel to supply current to electric hoists, cranes and other electrically operated mobile devices with motors having these characteristics and maximum horsepowers: 110 volts, single phase, 60 cycle — ½ hp maximum; 220 volts, two or three phase, 60 cycle — 3 hp maximum; 440 volts, two or three phase, 60 cycle — 7½ hp maximum. Wire sizes include a choice of No. 14 and 16 wire. Cord lengths up to 50 ft are available on certain models and when reels are mounted at the center of a runway or track, they will serve a track twice as long as the conductor cord. Rewinding is automatic.

The swinging guide rotates thru an arc of over 290° and four rollers at its end feed the cord in any direction — even at right angles to the reel — without cord damage.

For More Free Data CIRCLE CODE NO. on the Handy Return Card — Page 73

For Expanding
Heat Exchanger Tubes

NEW WILSON Torq-Air-Matic



First and only air-driven tube expander drive that accurately controls tube expansion by directly measuring torque output at the mandrel

Only the Wilson Torq-Air-Matic offers all these features: air driven, automatic trip-off, completely integrated, non-electrical, non-frictional, calibrated in ft lbs torque, lightweight, simply adjusted.

Send for your copy of Wilson Bulletin 55.

Wilson Heavy-Duty Air Driven Cleaners

offer quick way to clean fouled heat exchanger tubes

Wilson Tube Cutter

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Construction Specialties Co.
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Orlando

GEORGIA
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P. O. Box 252, Atlanta
North Brothers, Inc.
644 West River St.
Savannah

IDAHO
Fiberglas Engineering & Supply Co.
2527 Ark St., Boise

ILLINOIS
Standard Asbestos Mfg. Co.
860 West Evergreen
Chicago

KENTUCKY
General Insulation & Roofing Co., Inc.
116 North 3rd St.
Louisville 2

MISSOURI
Kansas City Insulation Co., Inc.
5305 East Ninth St.
Kansas City 26

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Fiberglas Engineering & Supply Co.
P. O. Box 7067
Albuquerque

NEW YORK
R. E. Hebert & Co., Inc.
271 Hollenbeck St.
Rochester 21

OKLAHOMA
Insulation Services, Incorporated
P. O. Box 8236, Tulsa

OREGON
Fiberglas Engineering & Supply Co.
406 N. W. Glisan Ave.
Portland 9

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North Brothers, Inc.
P. O. Box 3202, Columbia

TENNESSEE
North Brothers, Inc.
P. O. Box 883, Knoxville

TEXAS
The Gilmin Company
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Corpus Christi
Precision Insulation Co., Inc.
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For weatherproofing you can depend on

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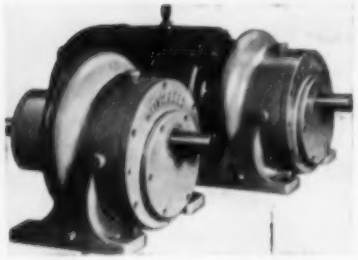
New Product Briefs (Continued)



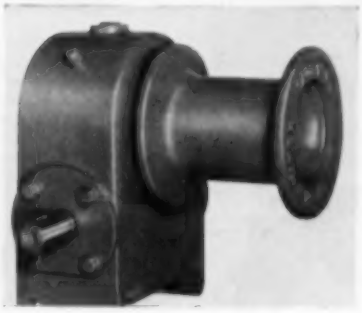
Parallel Shaft Reducer

G-24 The new line of specially engineered Parallel Shaft Reducers — in ⅛ hp to 20 hp and in 12 ratios — has been introduced by the **Rockwood Pulley Mfg. Co.**, 20 Crosby Street, New York, N. Y.

The Parallel Shaft units are available without motors; the design permits the input shaft to be driven by either a coupling, chain, or vee belt drive. Result — greatly increased variations in output speeds.

Speed Reducer

G-25 A new worm gear speed reducer which incorporates antifriction ball bearings both for input and output shafts has now been developed by **Tulsa Winch Co.**, 815 East First St., Tulsa, Oklahoma. Labeled Model G4S, the new reducer provides 29 to 1 reduction, is rated at 875 lbs-ft output torque, and is designed for intermittent operation. Weight is held to 36 lb by use of cast-aluminum housing. This new reducer can be driven by electric, gas, hydraulic motor or manually, or by single speed power take-off if truck mounted. The reducer can be furnished with a niggerhead if desired.



These new speed reducers are priced at approximately $115.00.

Pneumatic Control Loading Stations

G-26 A new line of auto-manual pneumatic control loading stations, developed by **Copes-Vulcan Division**, Blaw-Knox Company, Erie, Pa., are of the non-seal type. This assures "bumpless" transfer from automatic to manual positions or vice-versa without process disturbance or upset.

Transfer is a simple matter of matching gage pointers and turning an adjustment knob. The design permits omitting one control station normally used in many cascade control circuits. Pressure range is 3 to 15 psig, with pressure gages scaled from zero to 100%.

Better moisture resistance in rubber power cable!

Anaconda's Type AB butyl high-voltage insulation absorbs *far less moisture* than industry standards permit. Result: longer cable life, greater freedom from failure for users where rubber-type cable is installed in underground ducts or buried directly in earth. New Engineering Bulletin EB-27 gives full details on performance of Anaconda Type AB insulation in 15 Industry Specification Tests. Write for your free copy. Anaconda Wire & Cable Company, 25 Broadway, New York 4, N. Y.

SEE THE MAN FROM **ANACONDA®**
—PIONEER IN **BUTYL INSULATION**

Water storage tank for the city of Atlanta, Georgia. This 500,000 gallon tank was fabricated by the J. J. FINNIGAN Company, Inc. from raw material to final erection. 34' diameter, 75' high.

Build **FINNIGAN** *Quality...* *into your* **TANKS**

TANKS, PLATE WORK
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SMOKESTACKS
WATER HEATERS
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From small utility tanks to giants, like the one above designed to your specifications, FINNIGAN craftsmanship assures you that your tank will be quality built to your specification and requirement.

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4431 MAPLE AVE., DALLAS 9, TEXAS
P.O. BOX 2527, JACKSONVILLE 4, FLA.
4108 C. ST., LITTLE ROCK, ARK.

Lever Puller

G-27 A lightweight lever puller, a safe, compact hand tool for lifting, lowering and dragging in industrial and construction fields, has been developed

by **The Harrington Company**, Plymouth Meeting, Pa. It is available in ¼ ton and ½ ton capacities.

Known as the Peerless Pal lever puller, it has an oval-link chain, square drive ratchet head in the operating handle and a friction holding brake.

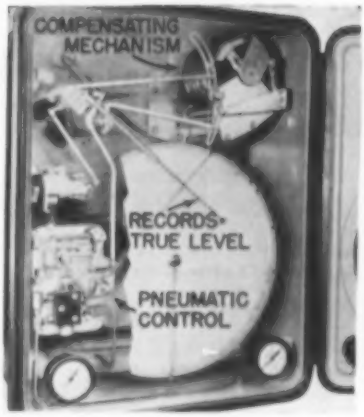
It is the only lever puller of this type with a detachable handle. The snatch block, which doubles capacity, can be installed without tools.

For More Free Data CIRCLE CODE NO. on the Handy Return Card — Page 73

Compensating Level Recorder

G-28 Automatic compensation of drum level measurements over entire boiler operating range is now available in the new Compensating Level Recorder being manufactured by **Bailey Meter Company**, 1050 Ivanhoe Rd., Cleveland 10, Ohio.

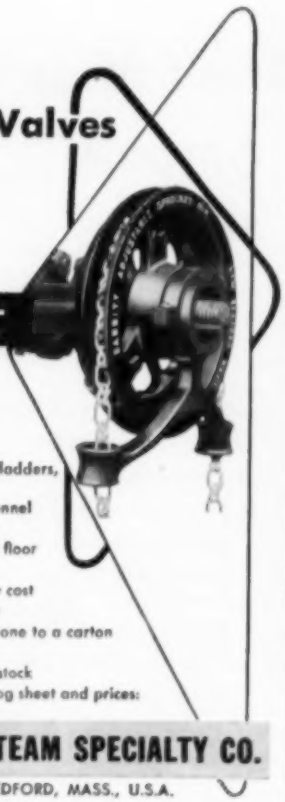
A bourdon helix compensator continuously readjusts the pen to record true drum level. Operating from drum pressure, the compensator offsets the effect of any change in specific weight of the water. Thus, at saturation conditions, complete compensation is achieved over entire ranges of level, pressure, and temperature.



This recorder is used on: (1) boilers whose rated pressure is above 900 psig; and (2) reheat boilers which must perform many hours below operating pressures during start-up.

Hi and lo alarm contacts and/or pneumatic retransmitters may be added. Range of level measurement is from 0-12 in. H_2O to 0-70 in. H_2O at maximum service pressure of 3500 psig. Range of pressure compensator is 0-2500 psig.

REACH All Overhead Valves without DANGER!
REACH for Babbitt



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- Eliminate dangerous catwalks, ladders, balconies, boxes, stools, etc.
- Prevent accidents, protect personnel
- Reach inaccessible areas easily
- Operate every valve from plant floor
- Easy to install and operate
- No maintenance; first cost, only cost
- Easy instructions with each unit
- Packed, completely assembled, one to a carton
- Fits any size valve wheel
- Your supplier carries complete stock
- Write for new descriptive Catalog sheet and prices:

Babbitt STEAM SPECIALTY CO.
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BUY CLOSE-COUPLED
LEWIS CENTRIFUGAL PUMPS
BULLETIN 143

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MANUFACTURERS
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New Product Briefs (Continued)

Dust-Resistant Trucks

G-29 Dust-resistant construction is now available on the complete line of electrically - powered materials - handling trucks by **Lewis-Shepard Products, Inc.,** 125 Walnut St., Watertown, Mass.

These trucks are protected against the effects of metal, coal, coke and grain dust, as well as carbon black.

Among the features of the trucks is that both the traction and pump motors are totally enclosed and provided with special, extra-wide, wrap-around brush covers and cork neoprene gaskets to provide tight sealing.

For protective purposes, the starting and first speed resistor are mounted in a tightly gasketed compartment, welded integrally with the main control compartment. Connections between the two compartments pass directly through the separating wall, and do not go outside the enclosure.

A 16-gauge sheet steel housing with a tight-fitting gasketed flanged cover encloses the main contactors and timing device.

Conductors for the main power circuit are neoprene insulated. Provisions are also made for protecting the battery compartment and connector.

These dust-resistant features are offered on Lewis-Shepard riding-type and "walkie" trucks, both high-lift and low-lift models.

For More Free Data CIRCLE CODE NO. on the Handy Return Card — Page 73

Dry-Type Transformers

G-30 A new series of totally sealed, dry-type distribution transformers is announced by **Acme Electric Corporation** of Cuba, New York, to meet the needs for a single series of transformers for a wide range of outdoor as well as indoor installations.

This new series covers ratings of 5 kva, 7½ kva and 10 kva, single phase 60 cycle; 9 kva and 15 kva 3 phase 60 cycle in all standard voltage of 600 and below.

By using Class H insulation throughout construction, size and weight per kva have been reduced, the manufacturer claims. Further, while the coils are designed to operate in the Class H temperature range, large cooling ducts permit adequate dissipation of generated heat. External case has normal temperature rise of only 40 C.

Dust free sealing eliminates the need for cleaning coils, which is a "must" requirement on open or ventilated type air cooled transformers.

Features that will appeal to plant maintenance men, are the simplicity by which these units can be mounted with three bolts to beams, columns or walls. Large wiring compartment and knockouts on sides, back and bottom together with solderless, clamp type connectors on a rigid insulating board make connecting easy. No soldering or taping of joints.

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PITTSBURGH, PA.
Right in the Heart of the Golden Triangle
400 outside rooms with bath. Large-screen television and radio at no extra charge in every room. Air conditioning. Finest dining room.
DIAMOND STREET BELOW GRANT
ATlantic 1-6970
Handiest Locations in PITTSBURGH
Hotel Pittsburgher MOTEL
Opposite Greater Pittsburgh Airport on Airport Parkway west. 56 air-conditioned rooms with large-screen television at no extra charge. Tile bath. Private phone. Restaurant facilities. Courtesy car to and from airport.
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Teletype Service. For immediate confirmation of reservations at no charge . . . telephone any Knott Hotel—or teletype PG-29.
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HOTELS
Joseph F. Buddy, Gen. Mgr.

Don't Miss

OCTOBER . . .

SPI

10th ANNUAL
BETTER PRODUCTION ISSUE

How to increase productivity is a major interest of Southern & Southwestern plant executives and engineers. This issue gives you a large number of proven procedures and improvements that may be copied and put to work.

Entire issue will report on better production because of improvements in electrical systems and controls, lubrication, maintenance, water systems, power and steam generation, etc.

Automation and Materials Handling

(*Starts on Page 33*)

mation, production people must first decide what they hope to accomplish with automatic equipment. What do they want the equipment to do? This must be worked out in detail.

They should then thoroughly familiarize themselves with the suitable automatic equipment offered by the various manufacturers. These examples should then be carefully studied so that the best possible equipment is selected. If the exact equipment needed is not available, perhaps it can be designed especially for the job.

After the study is made, those concerned with the problem should compare the ideal they have in mind with their existing equipment or with proposed new equipment of standard manufacture. Will the automatic equipment really do the job as well or better than standard facilities? Will the increased cost of the automatic equipment be offset by production savings or by reduced man-hours? Remember, automatic equipment usually means a reduction in productive man-hours, but an increase in maintenance hours.

The advantages and disadvantages of automatic operation must be carefully weighed against one another, and the equipment itself must be carefully selected. If economically justified, and if automation can be indeed accomplished in the specific installation, then the ease and efficiency of automatic operation alone will more than compensate for the time and planning necessary to make it a practical reality.

FUTURE EVENTS of Engineering Interest

Sept. 9-23: 12th Annual Instrument-Automation Conference & Exhibit. Instrument Society of America, Cleveland Auditorium, Cleveland, Ohio. Jim Irving, Chairman, Publicity Committee, Room 3120, 20 No. Wacker Drive, Chicago 6, Ill.

Sept. 20-21: 39th Annual Meeting. Public Utilities Association of the Virginias, Greenbrier Hotel, **White Sulphur Springs, W. Va.** R. W. McKinnon, Exec. Secy., PUA of the Virginias, 5 Franklin Rd., Roanoke, Va.

Sept. 22-25: Petroleum - Mechanical Engineering Conference. ASME, Hotel Mayo, **Tulsa, Oklahoma.**

Sept. 27: Oklahoma Regional Meeting. Natural Gasoline Association of America, Skirvin Hotel, **Oklahoma City, Okla.** William F. Lowe, Secy., Natural Gasoline Assoc. of America, 421 Kennedy Bldg., Tulsa 3, Okla.

Oct. 25: Southern Regional Meeting. Natural Gasoline Association of America, Washington-Youree & Captain Shreve Hotels, **Shreveport, La.** William F. Lowe, Secy., NGAA, 421 Kennedy Bldg., Tulsa 3, Okla.

Nov. 22: Panhandle Plains Regional Meeting. Natural Gasoline Association of America, Herring Hotel, **Amarillo, Texas.** William F. Lowe, Secy., NGAA, 421 Kennedy Bldg., Tulsa 3, Okla.

Dec. 2-6: 26th Exposition of Chemical Industries. Coliseum, **New York, N. Y.** 500 exhibitors of new developments and recent innovations in the industry. E. K. Stevens, President, IEC, 480 Lexington Ave., New York 17, N. Y.

Classified Advertisement

Classified rates are net, payable in advance, each month. Rates are based on column inch, with three columns per page, 10 inches per column, column width 2⅛ inches — a total of 30 column inches per page.

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— FOR USED TRANSFORMERS

Your used transformers are worth money! Send us a description and we'll tell you what they're worth!

We build transformers and coils to your specifications. Send us your blueprints for prompt quotation.

TRANSFORMERS BOUGHT, SOLD, REPAIRED and RENTED
45 Years of Dependable Service

THE ELECTRIC SERVICE CO.
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FOR SALE

One (1) Four Wheel Drive Line Construction and Maintenance Truck with 6 man crew compartment line body and pole raising equipment.

Model HRU — 1946; Mileage — 57,700; Wheel Base — 170"; Tires — Dual Rear 900 x 20; Engine No. 684822; Model — 6M2A-34; Serial No. 112422; Weight, including truck, body and basic equipment, approximately 21,300 lbs.; Winch — 2 drum, 20,000 lbs.; Body — American Coach; Derrick — T Type — has set up to 60 ft. poles.

Cash on delivery driveway — Fairmont, West Virginia.

MONONGAHELA POWER COMPANY
Purchasing Department, Fairmont, W. Va.

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• CHROME MOLY • CARBON MOLY
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Widest range of sizes & specs in the U. S.
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Alvey Conveyor Mfg. Co. 70
American Blower Corp. 30 & 31
American Cancer Society *
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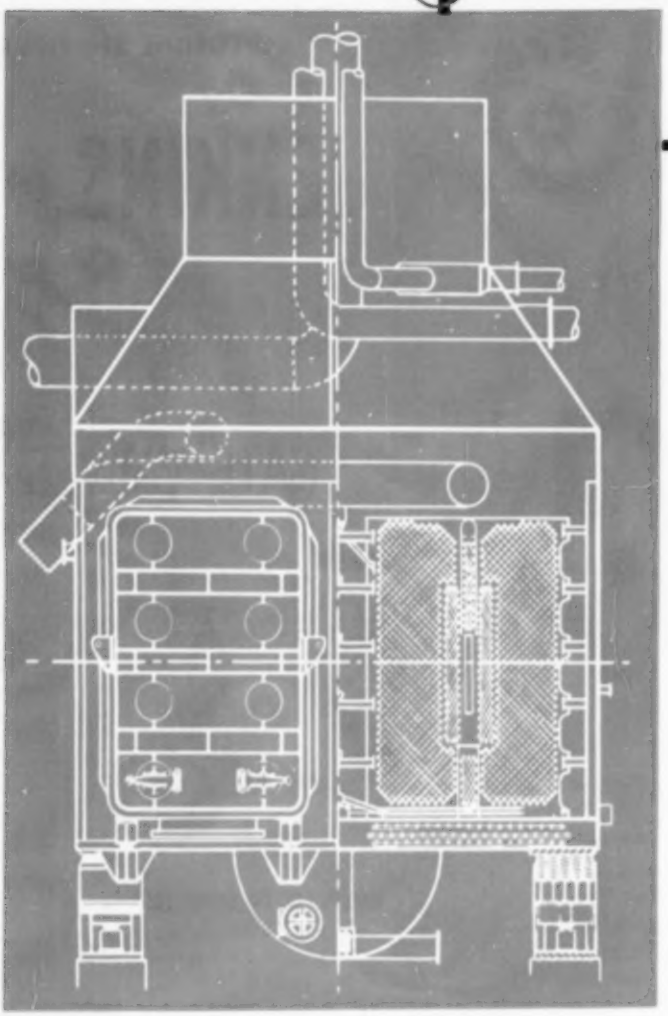

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